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WINTER 1989

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Surveys:

Dumas "SKATER"
Kyosho "JET STREAM"
MRP "Miss BUDWEISER"

Build:

Russian Missile Boat
Proportional Sail Winch

APBA Nats

94
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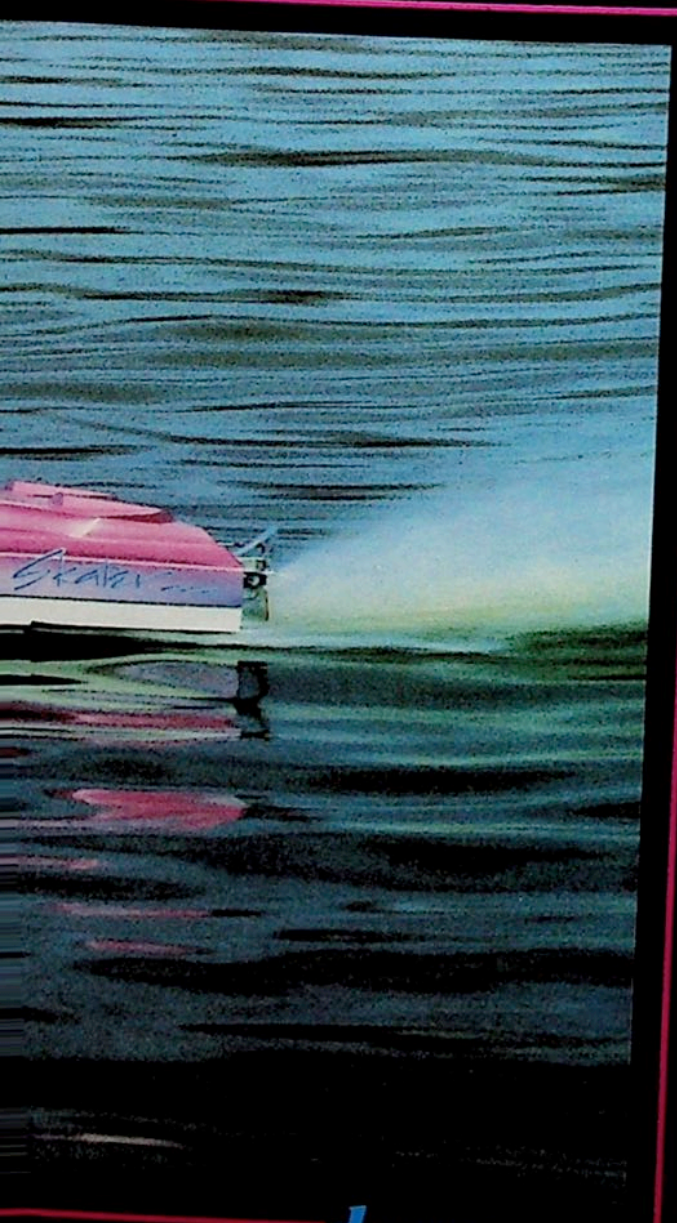

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These authentic workboat models offer you the finest in materials and construction, and all contain *full-size* plan sheets and written instructions. Midwest uses only the finest woods, such as Basswood, Micro-Lite® Plywood and Balsa, all cut to our exacting Micro-Cut Quality precision tolerances. You won't find any inexpensive, fuzzy plywood in any of these kits. Also, since they are scaled from real workboats, they handle authentically in use. See them all at your local hobby dealer today.

A complete color catalog showing our entire line of Micro-Cut Quality Woods, R/C boats, Running Hardware and Motorizing Accessories is yours, simply by sending $2.50 to the address shown below.

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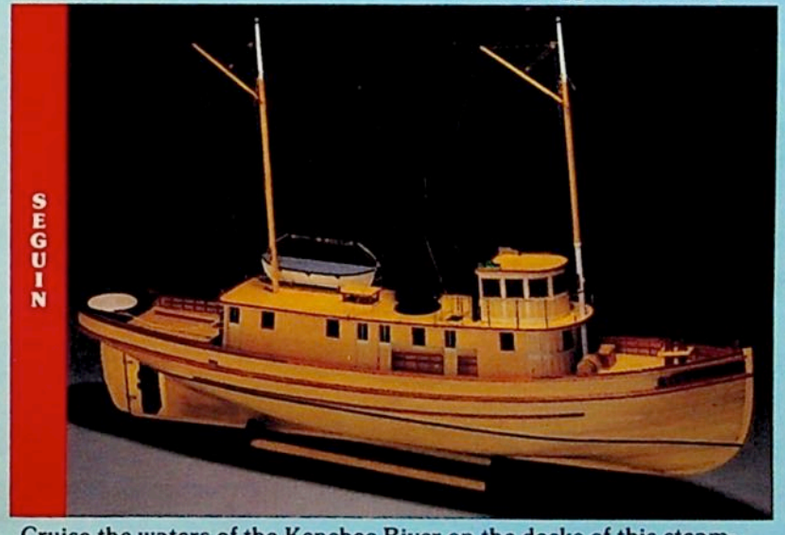
Adaptable to electric power with Running Hardware Kit #826 and MEPS-I Power System #845.

Requires 2 Channel R/C System.

Length Overall: 25" Beam: 7¼" Height: 16¼" Scale: ½" = 1'

Kit #956 **$62.95/suggested retail price**



Cruise the waters of the Kenebec River on the decks of this steam-powered tugboat. You'll construct this kit using die-cut Micro-Lite® Plywood frames and basswood planking strips, for authentic plank-on-frame construction. Cast britannia metal fittings are included for that added touch of realism. FOR EXPERIENCED MODELERS ONLY!

Adaptable to steam power with a Saito T2DR Engine and B2E Boiler, or 12 volt electric motor, and Running Hardware Kit #828.

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Length Overall: 39" Beam: 7¾" Height: 23" Scale: ⅜" = 1'

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Adaptable to electric power with MEPS-II Electric Motor #850 and MEPS-II Speed Control #851.

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Requires 2 channel R/C system.

Hull Length: 30" Beam: 10" Draft: 3" Scale: 1" = 1'

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Adaptable to electric power with Running Hardware Kit #826 and MEPS-I Power System #845.

To operate this model with two working fire monitors, you will need a 4 channel R/C System with 5 servos, and the addition of an electric fuel pump.

Length Overall: 25" Beam: 7¼" Scale: ½" = 1'

Kit #960

MIDWEST PRODUCTS CO., INC.

400 S. Indiana St. P.O Box 564 Hobart, IN 46342 (219) 942-1134

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U.S. BOAT & SHIP MODELER

WINTER 1989

volume 3, number 11

Corporate Office: 898 West Sixteenth St., Newport Beach, CA 92663 Ph. (714) 645-8830

DEPARTMENTS

CAP'N'S LOG, Bill Northrop 6
SHIP'S STORE 14
STRICTLY SAIL, Rod Carr 46
BOOKS, Peter Shreeves 64

FEATURES

MTB 74 & NORMANDIE DOCK RAID, Tony Stinson 10
SEAFAIR MINI GOLD CUP, Jerry Dunlap 20
WING SAILS, Francis Reynolds 22
R/C WARSHIP COMBAT CHAMPIONSHIPS, Tom Jass 33
SSMA REGIONALS, John Louk & Carl Neary 36
APBA NATIONALS, Jerry Dunlap 42

PRODUCT SURVEYS

DUMAS "SKATER," Jerry Dunlap 18
MRP "MISS BUDWEISER," Stephen Brown 60
KYOSHO "JET STREAM," Jerry Dunlap 62

CONSTRUCTION

RUSSIAN OSA MISSILE BOAT, Walt Musciano 25
"PROPORTIONALIZING" THE DUMAS SAIL WINCH, William Whitten 30

COVER; Stephen Brown's electric powered MRP "Miss Budweiser" makes a dramatic, water-throwing leap, during one of its test runs for the Product Survey on page 60.

Bottom Insert: Electric powered model of the motor yacht "Awaywego," built by Jack Hoag, Racine, Wisconsin. More information on page 8.

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10-2011 DECK AND HULL JOINED INCLUDES MOTORS AND MICRO-SWITCH HIGH AMP SPEED CONTROL.
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Budweiser

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FROM THE WORLD'S LEADER IN ELECTRIC PERFORMANCE BOATS

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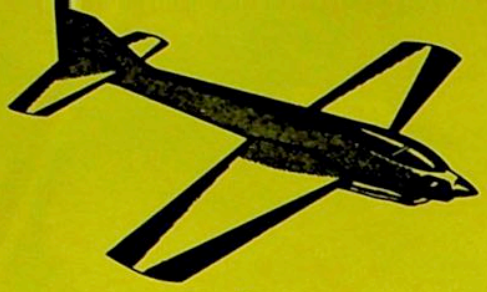
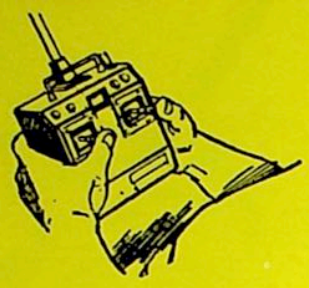
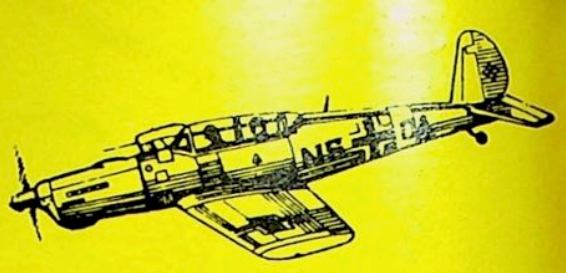
MODEL RACING PRODUCTS, INC. - USA







INTERNATIONAL IMS MODELER SHOW

NEW

THE THIRTEENTH ANNUAL

MODEL SPORT & HOBBY SHOW

INDUSTRY MEMBERS ONLY — FRIDAY, JAN. 12, 1990, 9 am-2 p.m.

GENERAL PUBLIC — FRIDAY, JANUARY 12, 1990, 2 p.m.-7 p.m.
GENERAL PUBLIC — SATURDAY, JANUARY 13, 1990, 10 a.m.-6 p.m.
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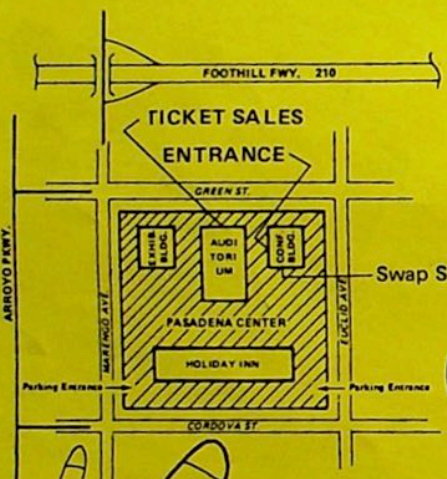

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INDOOR DEMONSTRATIONS
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• GIANT RAFFLE • • SWAP SHOP •

SWAP SHOP: Bring your saleable items to the Swap Shop. NO DEALERS, PLEASE! Table rent; $30.00 for two days, includes one admission. You are responsible for your own sales. IMS is not responsible for lost or stolen items.

ADVANCE TICKETS: Save time and waiting in line. Order your tickets in advance. U.S. only. Send check or money order payable to IMS, Inc. (Allow 3 weeks for checks to clear), and include self-addressed legal-size stamped envelope. One adult ticket $5.00, under 13—$4.00, (no charge under age 6).

STATIC MODEL COMPETITION: Entry is free, open to all ages, no limit on number of categories entered per contestant, but only one entry per category. Contestant must be builder of model. Trophies and ribbons awarded in over 50 categories. Send SASE to IMS office for list of categories, competition rules, and advance entry form.

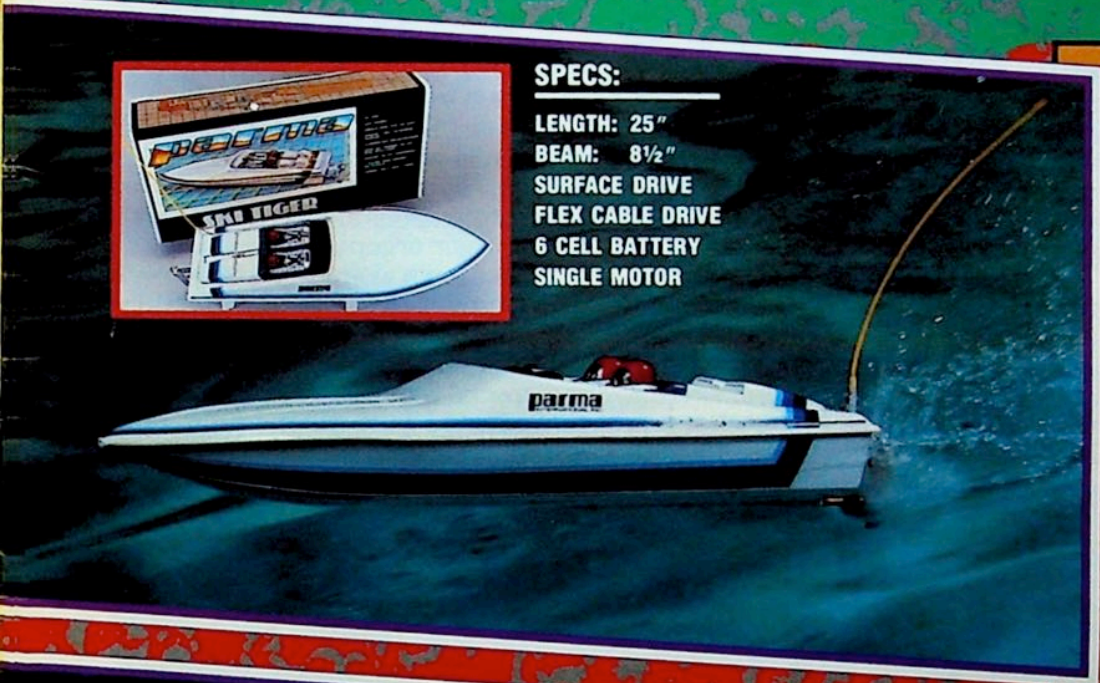
GIANT RAFFLE: Radio control systems, kits, engines, etc., to be raffled off during show. Big prize numbers to be announced, numbers for smaller prizes to be posted. New tickets sold each day. No carry-overs. Prizes must be claimed at show. Another ticket drawn if big prize is not claimed. Proceeds donated to charitable organizations.

INTERNATIONAL MODELER SHOW Office: P.O. Box 10127, Costa Mesa, CA Ph: (714) 548-4700

Bring your children, so they can learn to build and fly a MODEL AIRPLANE during the show!

PARMA

Makes Some Waves

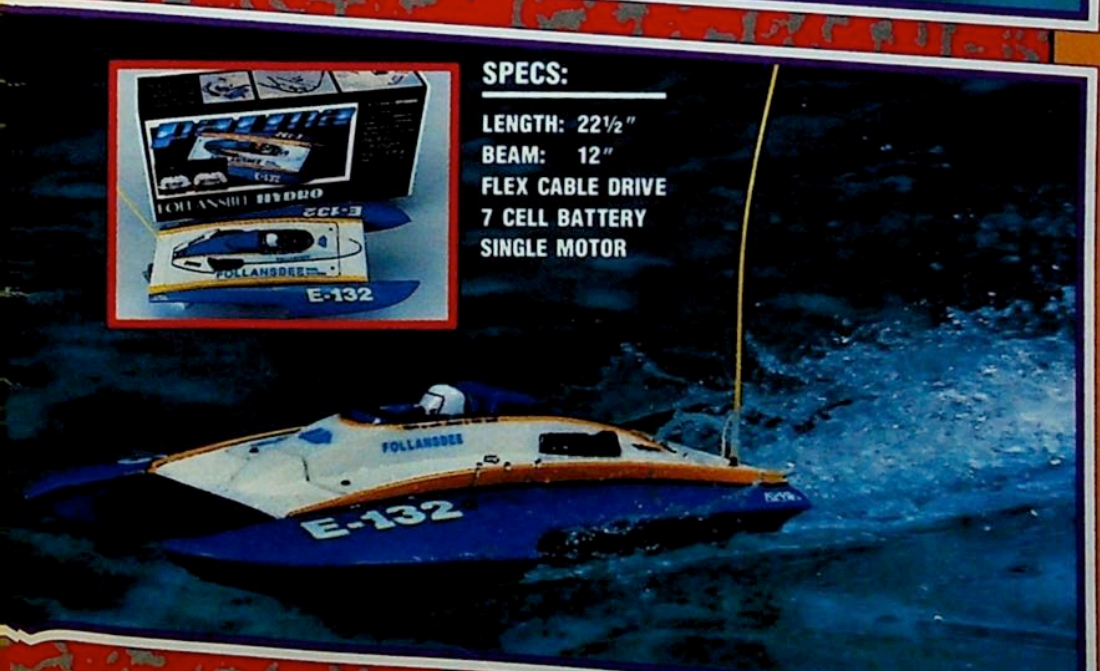


SPECS:

LENGTH: 25″
BEAM: 8½″
SURFACE DRIVE
FLEX CABLE DRIVE
6 CELL BATTERY
SINGLE MOTOR

SKI TIGER

Parma's New Ski Tiger kits define the term "fast electric" boats. A modified vee-hull design has been coupled with the latest surface-drive technology to produce a truly explosive performance package! The rugged, vacuum-formed, ABS plastic kits are available in basic, deluxe, and supreme versions. Also available separately; all four hull components in durable, paintable lexan! Get out of "dry dock" and make some waves of your own with the fast, easy to assemble **Parma Ski Tiger!**



SPECS:

LENGTH: 22½″
BEAM: 12″
FLEX CABLE DRIVE
7 CELL BATTERY
SINGLE MOTOR

FOLLANSBEE/HYDRO

Brand new for electric boat enthusiasts is the Follansbee Hydro kit. A 1/10 scale replica of the 5 litre hydro sponsored by the Follansbee Dock Systems Co. of Follansbee, West Virginia. The innovative lexan hull design gives you total freedom for painting, ease of assembly and high impact resistance. This sleek craft comes with all the colorful mylar decals necessary to duplicate the real thing. Available in basic, deluxe, and supreme versions, Parma's Follansbee Hydro is your ticket to high speed water action!

So choose your weapon, off-shore vee or hydro; when it comes to excitement and value, Parma's Ski Tiger and Follansbee Hydro are both — unbeatable! To find out more, rush down to your local Parma dealer!

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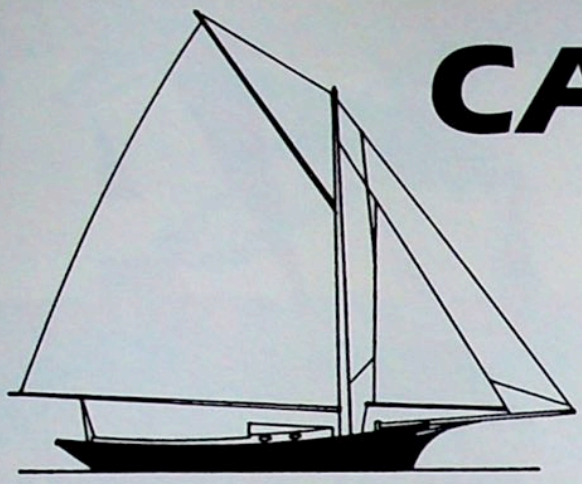


CAP'N'S LOG

By BILL NORTHROP . . .

Amber LaChance provides some idea of the size of her father Craig's 1/3-scale Whitehall skiff, described in text.

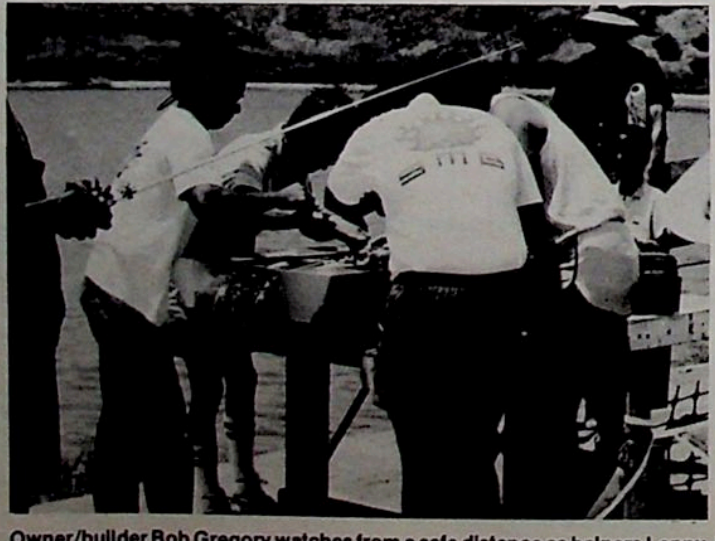
The new year is almost upon us, and with it, not only a new year but a new decade . . . the 90's! To start the new year/decade off right, make it a point to take in the 13th annual IMS Model Sport and Hobby Show at the Pasadena Center, Pasadena, California, on January 12, 13, and 14. As mentioned in the Fall '89 issue, there is one significant change in the show schedule from previous years. To help relieve some of the crowding that has been occuring on Saturday and Sunday of the past few years, the show will also be open to the public on Friday from 2:00 p.m. to 7:00 p.m. Friday has always been completely set aside for industry members only, however, to better accommodate the public, we have shortened this Friday period to 9:00 a.m. to 2:00 p.m. At 2 p.m. the doors will be opened to the public. Of course, the show will also be open to the public as usual on Saturday from 10 a.m. to 6 p.m. and Sunday from 10 a.m. to 5 p.m.

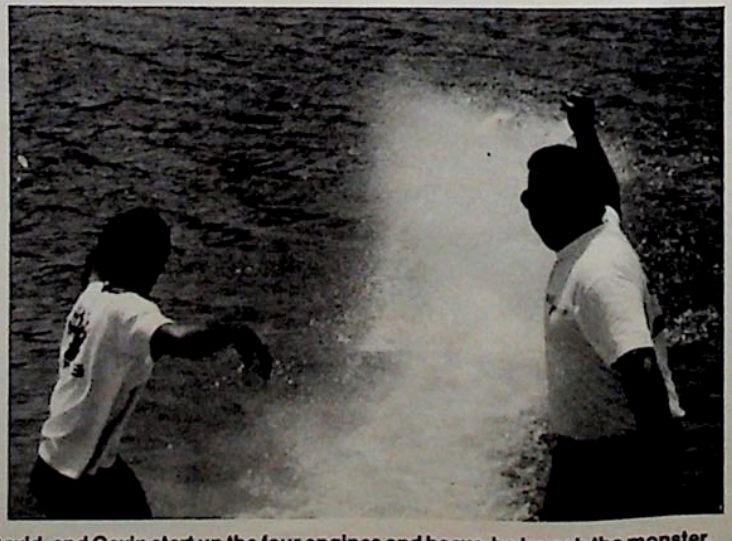
Once again the model boating will be concentrated in the Conference Building section of the show, just downstairs from the main entrance. The 32 by 32-foot boat pond will be available for manufacturer demonstrations as well as open running for local modelers who wish to show off their boats to the public. To avoid interference between boat and car R/C operations, the following frequencies have been assigned to boaters: Channels 64, 68, 72, 76, 80, 84, and 88 on the 75 mHz band, and 27.045, 27.145, and 27.255 on the 27 mHz band. Cars will be using the alternate surface radio frequencies. Boat operation is limited to electric and sail power (Fans will be provided if we are notified ahead of time that a breeze will be needed!). Water depth is approximately 16-18 inches.

For 1990, in addition to the fine trophies being awarded for static display in six categories of model boats (plus Best of Show for *any* category), an Airtronics radio control system will also be awarded to the winner in R/C Race Boat, Gas Powered and in R/C Boat, Sail. Several local model boat clubs will be on hand to exhibit projects by members as well as to answer questions and invite modelers to join their organizations.

Out-of-town visitors and exhibitors are reminded that the Pasadena Holiday Inn, (818)-449-4000, and the Pasadena Hilton, (800) 445-8667, are offering special reduced rates to show attendees. Be sure to mention IMS when making reservations. Both

This and the photos below, show Bob Gregory's four 11cc K&B-engined monster being run at the NAMBA Nats, Camarillo, CA. Speed unknown.





Owner/builder Bob Gregory watches from a safe distance as helpers Lenny, David, and Cavin start up the four engines and heave-ho launch the monster. Ralph Henry on radio at far left. Multiple servos were not strong enough for positive steering. Awesome!

hotels are within a short walking distance of the show. If you are flying into the Los Angeles area, contact Ultimate Travel Inc., (800) 346-8166, (in Florida, call 305-445-6566), attention Lynn Novak, for special airline rates on Delta or United Airlines.

The following is a list of exhibitors expected to be on hand for the 1990 IMS show, as of the end of October:

A & R IGNITION
ACADEMY OF MODEL AERONAUTICS
ACE R/C, INC.
ADVANCED PRODUCTS/RACE CASE
AEROSPACE COMPOSITE PRODUCTS
AIR PRO
AIRTRONICS, INC.
AMA TRANSMITTER CHECK
AMERICAN JR AIRCRAFT CO
AMERICAN ROTORBLADE MAGAZINE
AMERICAN SAILPLANE DESIGNS
ANTIQUE RADIO COLLECTION
APBA R/C MODEL RACING COM.
ASTRO FLIGHT, INC.
AVIATION ART GALLERY
B & B MANUFACTURING
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BOB MARTIN RC MODELS
BOB SMITH INDUSTRIES
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BYRON ORIGINALS, INC.
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COX HOBBIES, INC.
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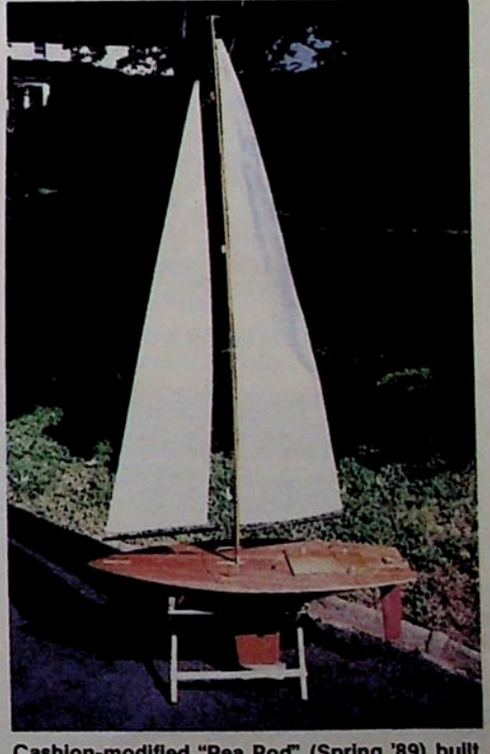
DAVE BROWN PRODUCTS
DAVEY SYSTEMS CORP.
DAVIS DIESEL
DEL ORO PACIFIC MODEL RAILROAD
DR J'S WEST COAST HOBBY WHSE
DUMAS PRODUCTS, INC.

The Whitehall skiff was built exactly like the full-size version, with steam-bent white oak frames. Craig's daughter Amber is not a midget, the 1/3-scale boat is five feet long!

DYNAFLITE
DYNAMIC MODEL PRODUCTS, INC.
E H YOST & CO.
EAGLE MODEL PRODUCT
EAGLE SQUADRON MODELS CLASSICS
EASTERN TOOL & SUPPLY CO
EDELBROCK-DELARA CORP.
ELDON J. LIND CO.
ELECTRONIC MODEL SYSTEMS (EMS)
EOM SYSTEMS
FIBER GLASS MASTER, INC.
FUTABA CORPORATION OF AMERICA
GARBART
GILMER HOBBY & MACHINE, INC.
GLEN IVY PROMOTION
GLIDESIGNS
GM PRECISION PRODUCTS, INC.
GOLDEN AGE MODELS
GORHAM MODEL PRODUCTS, INC.
GREAT PLANES DISTRIBUTORS
HAYES PRODUCTS
HIGH POINT PRODUCTS COMPANY
HIGH SKY



Day cruisers "St. Claire" and "Columbia" (hidden) ferry customers from Clark St., Detroit to Bobio Island amusement park. Steam powered, steel or iron-hulled, built circa 1905, and kept in beautiful condition. Great scale project. Photo and info from Capt. Fred KomLosy, licensed ocean skipper/ modeler and "down Mainer."

Cashion-modified "Pea Pod" (Spring '89) built and sailed by Karl Poschner, Kenilworth, New Jersey. Says it was inexpensive and easy to build.

Large electric (formerly steam) powered motor yacht "Awaywego"built by Jack Hoag, Racine, WI. Original cruised St. Lawrence and Great Lakes, built circa 1900. Seen at EAA "Sail-In."

First Annual EAA "Sail-In" took place on Lake Louise, a picturesque pond in the EAA Nature Center, Sept. 10, 1989. Note "Awaywego" tied up at shoreline.

MAC'S PRODUCTS
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MGA ENTERPRISES
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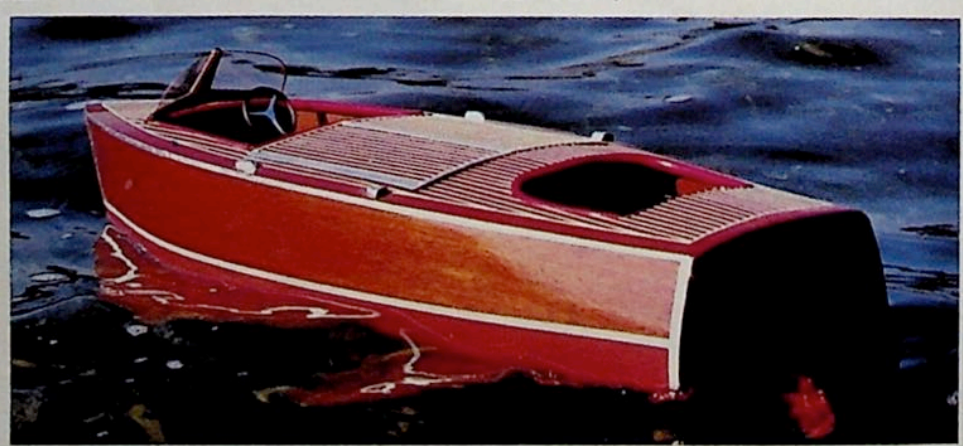
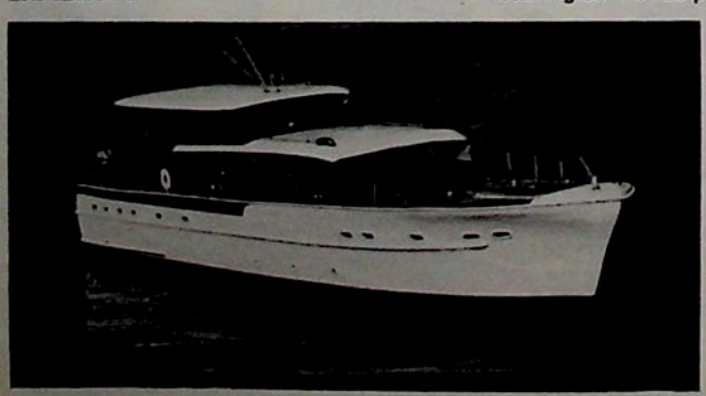
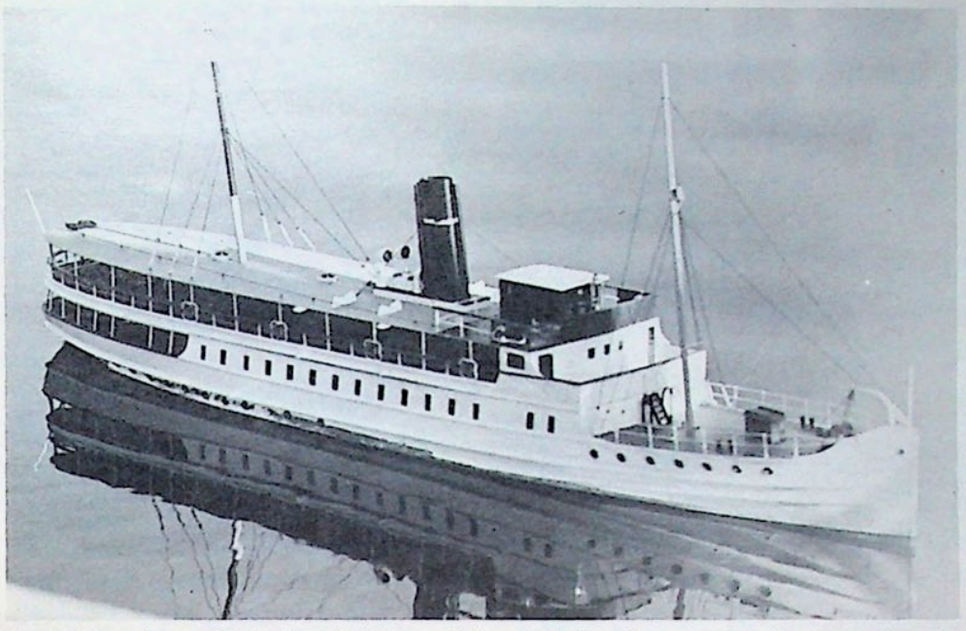
K & B MFG., INC.
KLOTZ SPECIAL FORMULA PRODUCTS
LANIER R/C



A 23-inch long model of circa 1930 Chris Craft runabout, by Gary Griswold, Mercer Island, Washington. He has plans for sale. See Classified.



Chris Craft motor yacht and Corvett. Each one took Gary Griswold about 80 hours to construct. Motor yacht won 2nd Place in the U.S. Coast Guard Exhibit, Puget Sound Ship Modelers Exhibition, 1989.



Swedish lake steamer "Bohuslan," built from a Billings kit by Tom Gorman of England, a member of Marvon Models Ltd., of Doncaster.

Photograph submitted by Matt Jacobson about 15 years ago. No longer at phone numbers stamped on back of print. Please contact us, Matt.

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WHITEHALL SKIFF

Craig LaChance, a wooden boat enthusiast from Moorpark, California, likes to build big and beautiful models of these classics. Two of his boats have appeared on the cover of *USB&SM;* the Lightning in the Spring '88 issue, and the Cape Cod Catboat in the Winter '88 issue. Now comes the Whitehall Skiff, in one-third scale and five feet long! If this guy finds out about 1-to-1 scale, the full-size boat builders are in for some stiff (or skiff) competition! We'll let Craig describe his latest:

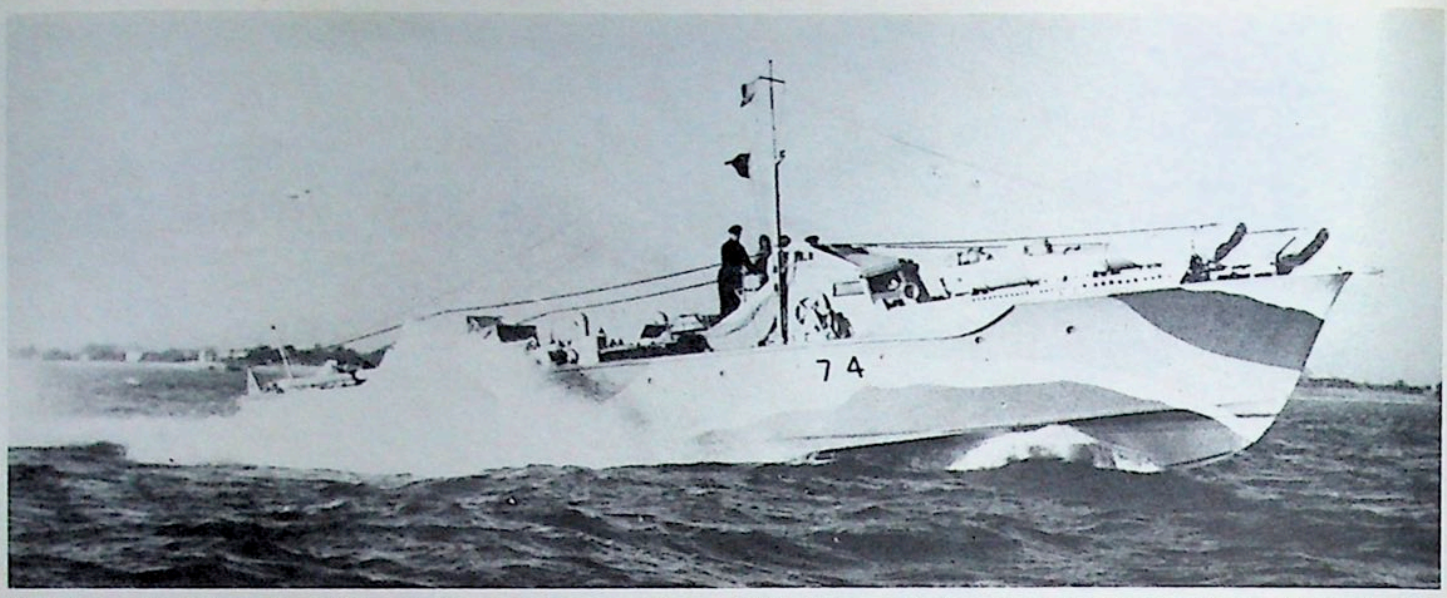
"The model is of a lapstrake Whitehall skiff, built over molds like the full-size, from plans for the full-size. Stem, keel, and transom are ash; frames are steam-bent white oak; thwarts, floorboards, and rudder are teak. Oarlocks are bronze. The on-board radio control system is hidden under the sternsheets (rear seat), and moves the rudder by cable, the tiller moving the skipper's hand and arm (as in the Lightning article). Removeable daggerboard is 7/32" thick cast lead, sheathed in 1/64" ply to retain wood appearance. The sprit rig spars are ash, sail is 1.5 oz. nylon. Displacement is 20 pounds. Plans are available from Ian Oughtred, 120 Heath St., London, England."

Oh. . . . The other equally beautiful model in the photos is Craig's daughter, Amber, 19 . . . one-to-one scale.

MULTIPLEX?

Several readers have inquired about the Multiplex servos used by Barney Kemter, in his article about the Victor Model Products "Tahoe II" in the Summer '89 issue. Many dealers do not carry this line, and almost as many have never heard of them. The Multiplex radio is a West German (maybe we won't have to use the term "West" too much longer!) product, very exotic and high tech . . . and very expensive. Not as intent on producing radios by the freightcar load as are the Japanese, the Multiplex systems are nevertheless available in the

Continued on page 80



MTB-74 seen shortly before the raid. Torpedo tubes have been moved from amidships to fire over the bow. Camouflage is as used during St. Nazaire raid. Photo by Vosper Ltd.

MTB 74 and the RAID on the NORMANDIE DOCK

By TONY STINSON . . . Fascinating account of "Operation Chariot," the raid on the Normandie Dock at St. Nazaire on the Loire River in France, and the part played by a PT boat.

With over forty years having passed since the end of World War II, most of the leaders who survived that conflict have died and the younger ones of the time have advanced in age to the point where memories of detail are failing.

Thus it is that only the major battles or "turning points" in the war are read about or seen on the movie screen by young people two generations removed. And the deeds and achievements of those who risked their lives during the conflict tend not to be seen by a younger generation as inspiration for achievement.

A battle which was not a "turning point" during the war but which brought out the utmost in character and courage among its participants was "Operation Chariot," the raid on the Normandie Dock at St. Nazaire on the Loire river in France. Now, this might seem like a strange way to begin an article on a torpedo boat, but MTB 74, a British Vosper boat, was specially modified for the raid and I doubt it is possible to talk about MTB 74 without talking about Operation Chariot.

Actually, the star weapon of the St. Nazaire raid was a converted American flush-deck destroyer USS Buchanan, which the Royal Navy renamed HMS Campbeltown and while this is not the story of the Campbeltown, we will refer to her more by way of reaching the part played by MTB 74.

The strategic value of the Normandie Dock to the German Kreigsmarine was that it was the largest dock in the world at the time and the only one capable of taking the Bismarck and the Tirpitz.

Shortly after the sinking of the Bismarck in 1941, the British began looking around for a way of putting the great dock out of action "for the duration." St. Nazaire was also the site of German U-boat pens and no amount of bombing by the allies had succeeded in destroying them. A fresh approach was called for.

The Navy came up with several ideas but the one supported by Lord Louis Mountbatten involved a combined Navy/Commando attack on the dock with the object of destroying both the Normandie Dock and its pumping equipment.

It was believed that if the dock gates could be rammed open by a ship, and the ship was carrying enough explosive, then when the explosive was detonated, the force of the blast would be sufficient to demolish the dock. At the same time, Commandos could fight their way into the pumping station for the dock and lay demolition charges to destroy the pumping equipment.

There was much opposition to the bizarre plan within the Navy, but it had the enthusiastic support of Lord Mountbatten and when the plan was shown to Mr. Churchill, he was delighted. There would be no holding back now.

Training for the raid was carried out at Falmouth, U.K. between March 12 and March 25, 1942. A total of 20 vessels and 611 men would be involved, of these, 277 were army commandos. Of the naval forces taking part, personnel from Canada, New Zealand, and Australia would be included with Royal Navy manpower.

HMS Campbeltown was stripped of her US Navy armament and disguised as a German Wolf class destroyer. The operational plan called for passage of the 20 ships taking part to sail from the British south coast across the channel undetected by the Germans. As there would be no way such a force could penetrate six miles up the Loire river to Saint Nazaire undetected, the German forces, particularly those surrounding the area of the Normandie Dock had to be made to believe the fleet was German for long enough to allow the raid to succeed.

ENTER MTB 74

A Motor Torpedo Boat with special capabilities had been included in the attacking force for the purpose of

blasting a passage through the lock gates to a secondary entrance to the port, allowing craft carrying the Commandos to land them close to the pumping station.

MTB-74 was built by Vosper in 1940 and had been specially modified for entering Brest harbour and attacking the Scharnhorst and Gneisenau. For this, the boat had tubes mounted out on the foredeck instead of the usual mounting amidships. All machinery was stripped from the torpedoes and they were loaded with 1100 lbs. of Aminol, the most powerful explosive in use at that time. The compressed air charge used was enough to propel the fish a distance of 150 ft. at a minimum height of 3 ft. above the water.

The MTB was powered by no less than five engines. Three of these were Packard V-12s, two of which were mounted forward, while the third was mounted in the rear between two Vosper V-8 engines. These three engines had their drives reversed through forward boxes mounted under the forward Packards. This gave MTB nearly 2000 hp and a top speed of over 40 knots, making it one of the fastest warships afloat.

MTB 74 was equipped for cutting boom defenses, a feature not required at St. Nazaire. Total fuel capacity aboard for the trip to France was 2678 Imperial gallons (3216 U.S. gal.). Even with this fuel capacity MTB 74 would not have the range to reach the target and return, so she was towed across the channel by HMS Campbeltown with the plan that she would return from the raid under her own power. When it is considered that MTB 74 was only 70 ft. in length, the capabilities she had surely made her one of the most unique naval vessels ever built.

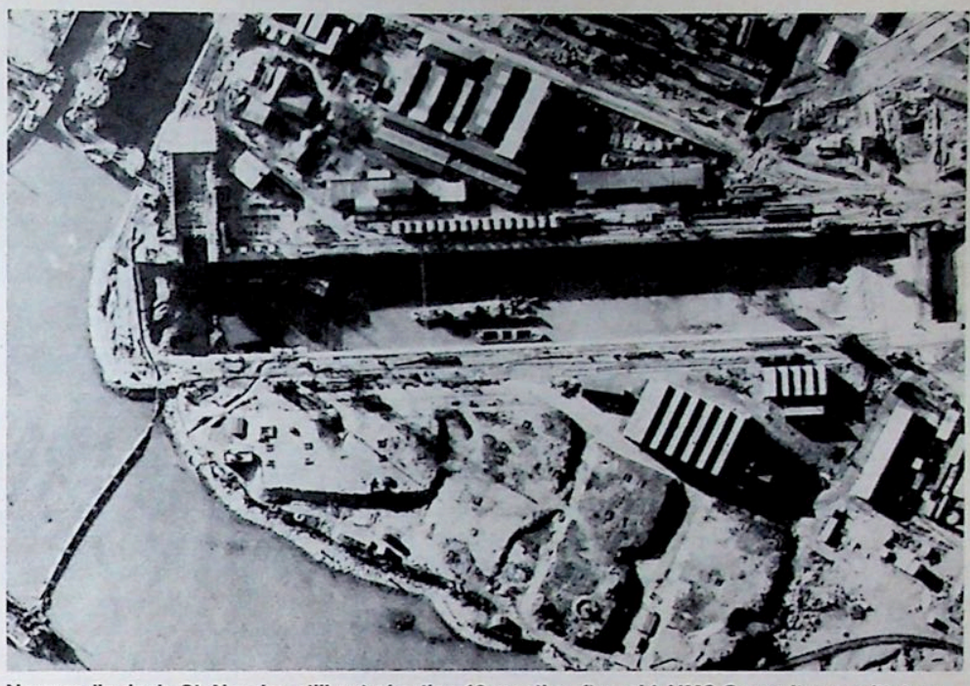
OBJECTIVES

One of the prime objectives of the St. Nazaire raid, apart from destroying the Normandie Dock, was to render the entire area tidal, by destruction of any of the lock gates. This would have made it impossible for the Germans to use the submarine pens at St. Nazaire. In the event, this was not achieved but a great deal more damage was done.

CAMPBELTOWN

Modifications to HMS Campbeltown were aimed at loading her with enough explosive to demolish the dock and equipping her with enough armour plating to protect the crew and commandos aboard during the run-in to the target.

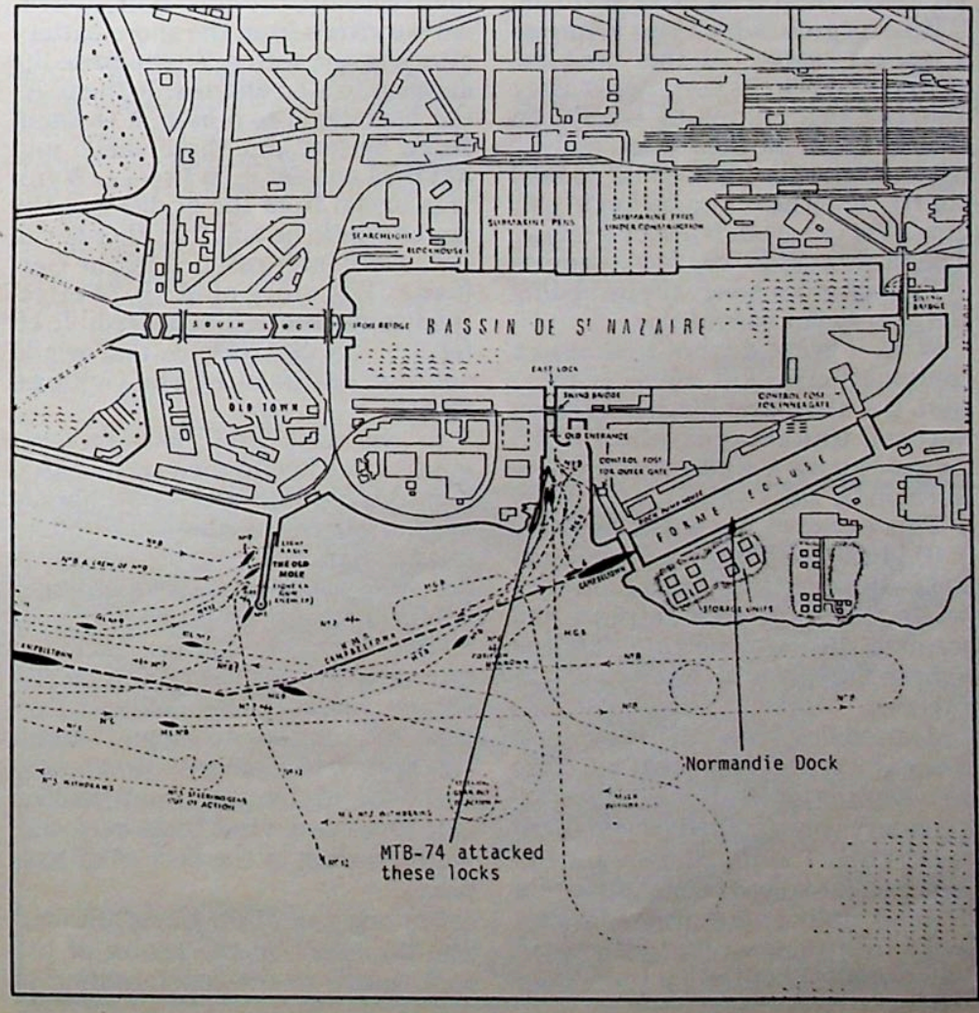
The explosives fitted to the doomed ship amounted to 5 tons of Amonal, located in 24 depth charges sealed in concrete and steel plate in the keel area. This was timed to go off several hours after being fused on arrival. Truly, this would be the most spectacularly successful use found for any of the Lend-Lease warships during WWII!

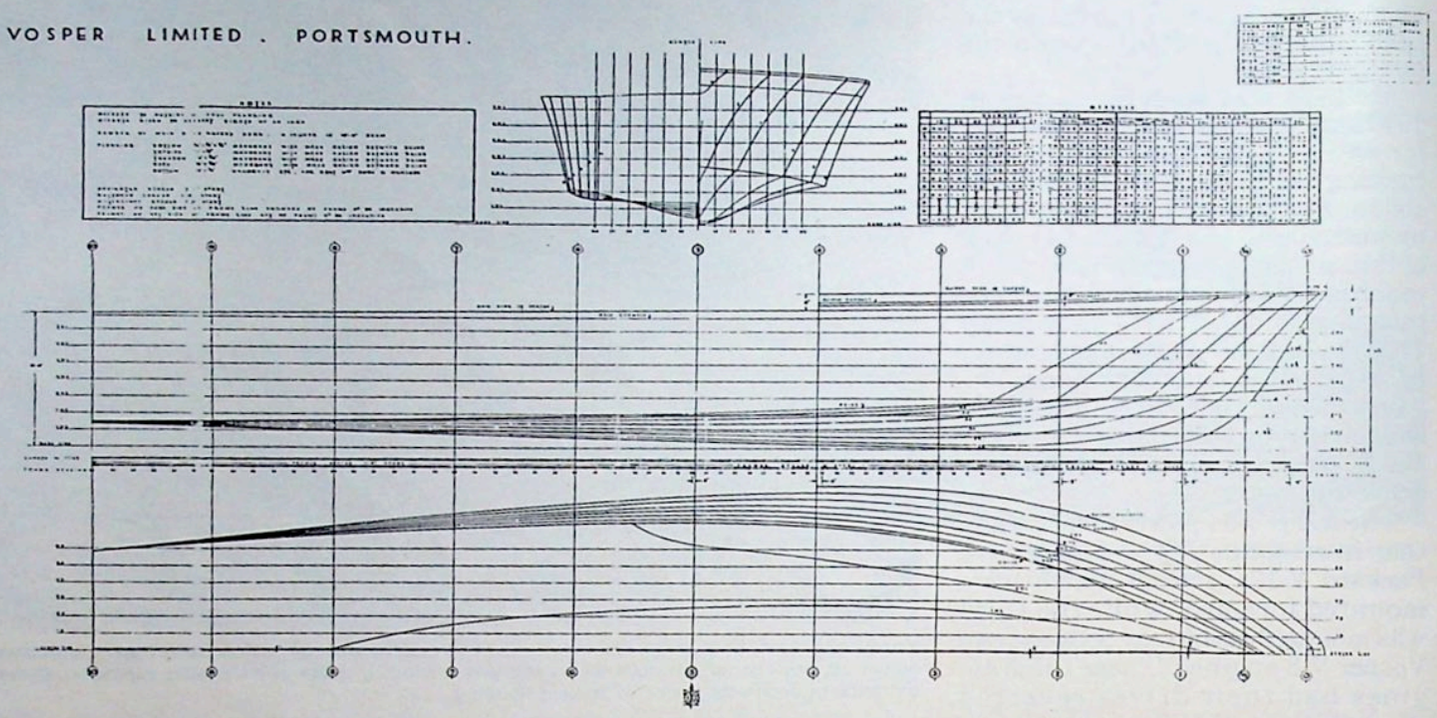


Normandie dock, St. Nazaire, still out of action 10 months after raid. HMS Campeltown, with bow blown off, lies centrally in dock where she was carried by surge of water after explosion. Outer entrance of dock was sealed to prevent flooding.

PREPARATIONS COMPLETE

With the naval force under the command of Cmdr. R.E.D. Ryder, R.N., and the Commando force lead by Lt. Col. A.C. Newman, Operation Chariot departed from Falmouth U.K. at 1400 hrs. on March 26, 1942. In command of HMS Campbeltown





was Lt. Cdr. S.H. Beattie, R.N. In command of MTB 74 was Sub. Lt. Micky Wynn.

MTB 74 was towed by HMS Campbeltown and a smooth passage was made across the Bay of Biscay as the little fleet headed for a British sub, HMS Sturgeon, which was acting as a marker beacon. At this time, destroyers leading the fleet turned away and the little ships of Operation Chariot were on their own, moving up the Loire river. They had no tidal charts and the Campbeltown was grounded twice but without damage. The raiders got to within 1-3/4 miles of the lock gates before the defending German forces opened fire.

With a great deal of luck and a combination of skill and determination, the attacking British force remained undamaged until HMS Campbeltown had rammed the Normandie Dock gates.

This came with a shattering roar at 0134 as Campbeltown, running at 20 knots, sliced through the anti-sub net guarding the dock entrance and crashed through the gate, landing right in the center of the dock, just as intended.

Meanwhile, to deal with the subject of our story, Lt. Wynn in MTB-7 had been waiting for his orders to attack a secondary gate and had picked up 26 survivors from sunken motor launches, destroyed before they could off-load their commandos. Wynn fired his torpedoes at the lock gates to the "Old Mole." The fish leapt from their tubes, struck the gates, then sank in silence. As with the Campbeltown, their effectiveness would be felt later by the Germans.

MTB-74 was then ordered to withdraw. On the way down the Loire estuary, the crew noticed British survivors from the shore battery attack in the water. Wynn made the decision to stop and rescue them. As the boat came to a stop, a German shore battery put three shells into MTB-74 and set it on fire. Lt. Wynn was blown from the bridge into the water where he and the other survivors were later rescued by the Germans. The story of MTB-74 effectively ends there. The incredible effects of the St. Nazaire raid would soon be endured by the German forces.

In the dock area, British commandos had fought their way into the pumping station and laid charges around all the equipment used to move water in and out of the dock. A full scale battle with German forces was in progress with fire coming from all directions. The charges laid in the pumping station were set on 90-second fuses. These detonated on time and the entire pumping station was destroyed. The same commandos had also laid charges around the lock gate areas and when these exploded, more flooding of the dock area took place.

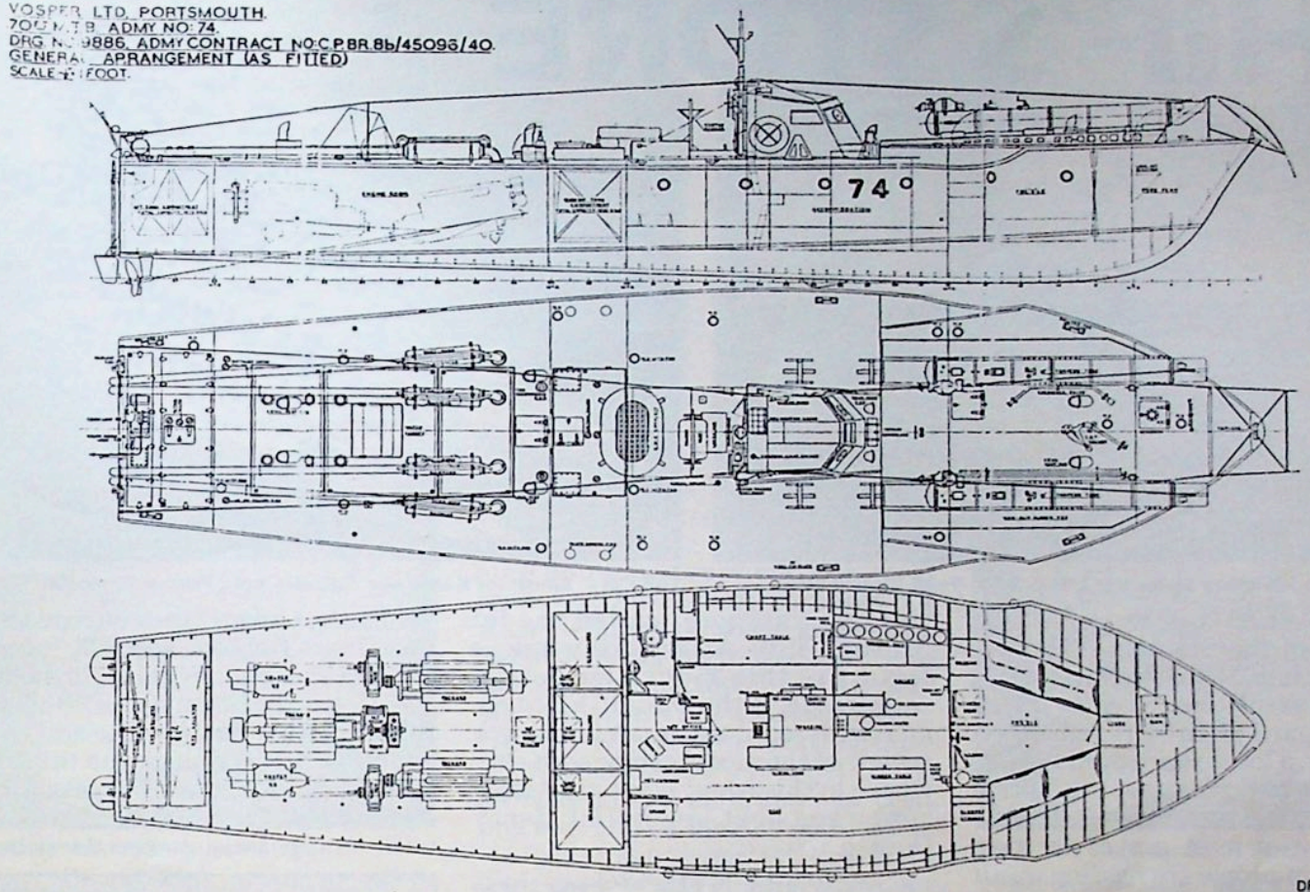
But what of HMS Campbeltown? She lay silent in the center of the dock, much to the consternation of her commander and crew, many of whom by now had become prisoners.

It was now Sunday morning, March 29. Following the raid, the Germans had thrown a cordon around the whole dock area in order to guard it from further enemy commando activity as they were not sure whether all of the raiding force had been accounted for. Around 0900 hours a German inspection party arrived at the dock and boarded the Campbeltown. As time went on, more Germans including an admiral arrived and boarded the old American destroyer. Suddenly (as happens with all explosions) the whole purpose and intent of Operation Chariot succeeded. HMS Campbeltown blew sky-high. It was 11 a.m., some 8 hours after the charges on the ship had been set to detonate. The effect of the delay could not have been more spectacular. Not only did the explosion succeed in destroying the Normandie Dock, but it killed nearly 400 enemy personnel including some very senior officers.

Pandemonium again broke out all over the dock area as German guards began shooting at anything which moved. But their hours of terror were still not over. At precisely noon two further explosions shook the St. Nazaire surroundings. The torpedoes fired by our hero MTB-74 exploded under the gates to the Old Mole.

THE COST

Seventeen British naval vessels were lost in the St. Nazaire raid, not counting the Campbeltown. Her loss


VOSPER LTD. PORTSMOUTH.
70ft M.T.B. ADMY NO: 74.
DRG. NO: 9886. ADMY CONTRACT NO: C.P.B.R.8b/45096/40.
GENERAL ARRANGEMENT (AS FITTED)
SCALE ½" = 1 FOOT.
74
DRG. NO: 9886.

was a planned one. Of the combined British naval and commando force, 109 returned to England, 109 were taken prisoner, 59 were killed or missing, and 5 succeeded in escaping to Gibraltar. In addition, over 200 local French people were killed by the Germans in the wild shooting foray. A total of between 400 and 600 Germans were killed.

SUCCESS OF THE RAID

The objective of putting the world's largest dry dock out of action for the duration of the war was achieved. Repairs to the Normandie Dock were not completed until 1947.

What of MTB-74? From the modeler's point of view, the loss of this incredible naval vessel at the height of its fame makes the task of building it in model form a difficult one. The only photograph of MTB-74 that I know of is produced here, along with the drawings which were kindly provided by Vosper Thornycroft in the U.K. Arriving at correct colors for the boat will be difficult.

INFORMATION SOURCES

In writing about MTB-74, I have only given a very brief account of the raid on the St. Nazaire docks. It became known as "The Greatest Raid of All," which in fact was the title of a movie made of this famous episode of WWII, in the 1950s. I have not seen it released in video or on TV in recent years. MTB-74 has a starring part in the movie, so if you see it, there will be the opportunity to obtain some color information from this.

For those of you wishing to read more on the St.Nazaire raid, the following publications are suggested: Phillips Lucas, "The Greatest Raid of All," Heinemann 1958; R.E.D. Ryder, "The Attack on St. Nazaire," Macdonald & Co. 1970; Stuart Chant-Sempill, "St. Nazaire Commando," John Murray 1985; Warship Profile #5, which is a description of HMS Campbeltown (ex USS Buchanan).

The writer's address is P.O. Box 531, Brookvale N.S.W. 2100, Australia, and I would be pleased to hear from anyone who builds a model of MTB-74 from these plans or who can supply more information on this interesting boat. •

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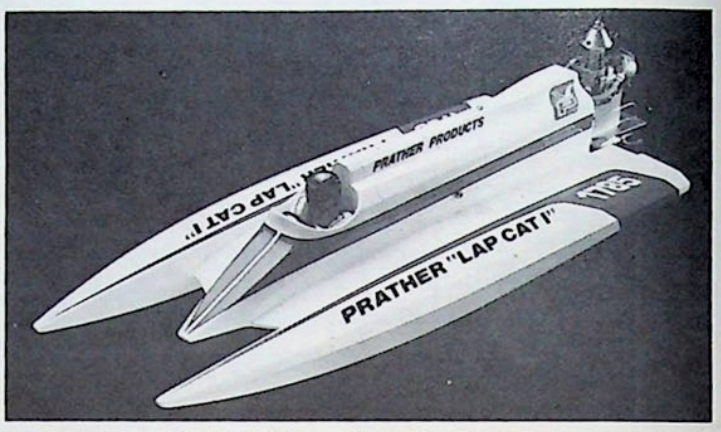
Dynamic Models offers kit for this USCG 82 ft. Point-Class cutter.



"Lap Cat I" tunnel for K&B 3.5cc outboard from Prather Products.

In the Fall '89 issue we published a photo of the Staubitz ATF Tug, from Dynamic Model Products, and it was mistakenly identified as a U.S. Coast Guard Point-Class Cutter. Naturally, a lot of sharp-eyed readers caught the error and gave the folks at Dynamic a bad time about it. If nothing else, it at least proved to them that a lot of people are reading about their products!

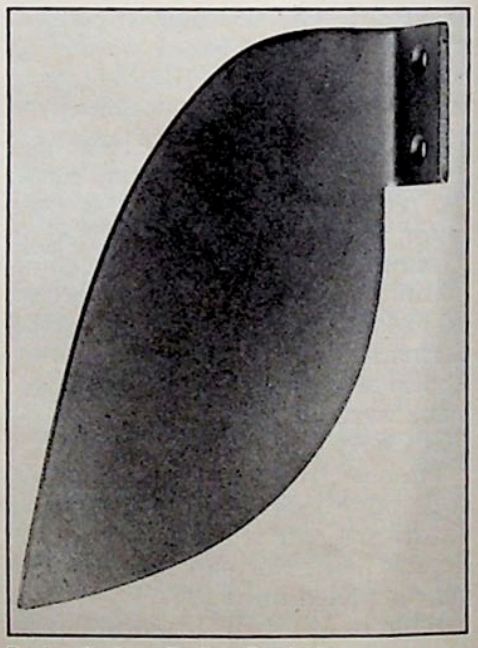
As mentioned in the fall issue, the ATF Tug (51-1/4" hull) is one of four kits in the new Master Series introduced by Dynamic Models, all from Staubitz of Buffalo, which was recently purchased by Dynamic. Other kits include a 1/32-scale WWII Subchaser (41" hull), the USCG 1/24-scale Point-Class Cutter (41" hull), and the previously released PCF "Swift" Boat. For more information, check with Dynamic Model Products, Drawer "C", Port Jefferson Station, NY 11776, phone (516) 928-8200.

* * *

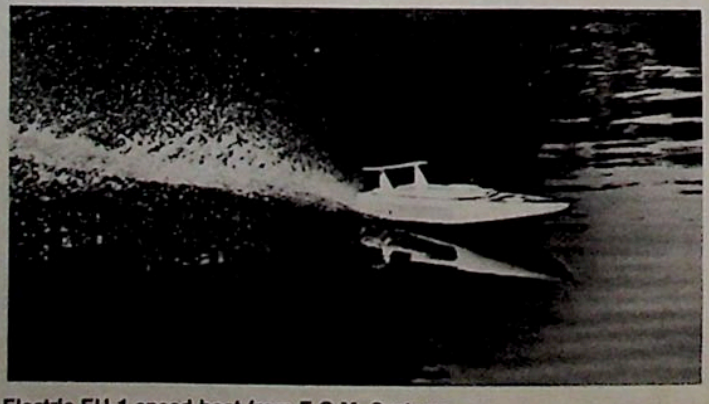
Great Planes Model Distributors Co., P.O. Box 4021, Champaign, IL 61820, phone (217) 398-6300, has introduced a new gas-powered racing boat by Kyosho in the Almost-Ready-to-Float category, called the Jet Stream GP-10. An especially unique feature of this 35-inch long ocean racer model is the O.S. .10 FP-M engine with recoil starter. A full-length review of the model can be seen elsewhere in this issue, written by long-time race boat specialist, Jerry Dunlap.

Great Planes is also offering three recently available Hobbico AC/DC chargers that will appeal to electric boaters. The Model 900 AC/DC Auto Charger features a15-minute precision timer, black anodized face plate, heavy-duty transformer, trickle charge pilot light, and 24-inch output cord with Kyosho-style connector and Tamiya adapter included. The Model 905 AC/DC Multi-Charger replaces the current Hobbico model, and includes all of the Model 900 features, but uses an easy-to-read charge/discharge AMP meter. Hobbico's Model 910 Variable Rate AC/DC Multi-Charger includes all of the 900 and 905 features, plus a current rate adjustment dial, voltage monitoring jacks, and a charge rate chart. Suggested retail prices are; $39.95, $57.95, and $64.95 respectively.

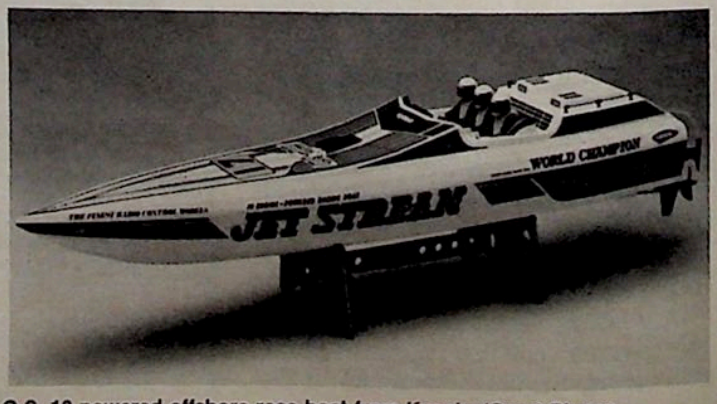
Finally, Great Planes introduces a new line of Hobbico, specially formulated cyanoacrylate glues for hobby use. Under the title name of "Bullet," the glue is available in one and two-ounce bottles, and thick and thin viscosities. It works well with porous materials such as balsa, as well as with non-porous materials (fiber-



Racing fin from Prather Products.



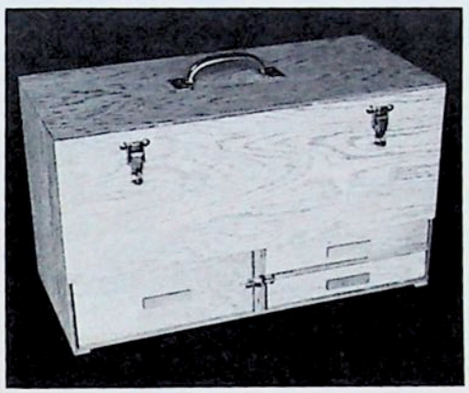
Electric EU-1 speed boat from E.O.M. Systems.



O.S. 10 powered offshore race boat from Kyosho/Great Planes.

Bullet line of cyanoacrylate adhesives from Hobbico.

Dynamic Models' 205 ft. ATF Tug Master Series kit.



Portable tool box from Boxes Plus.

glass, plastic, etc.). Also available in the Bullet line is an activator to speed up cure time, and a debonder, which dissolves all CA glues.

* * *

Prather Products, Inc., 1660 Ravenna Ave., Wilmington, CA 90744, phone (213) 835-4764, has announced two new products; the Lap Cat I Tunnel for the K&B 3.5cc outboard, and a racing fin to improve the handling of deep vees and mono hulls in turns and on the straightaways.

The Lap Cat I is smaller than the previous design and handles rough water at even higher speeds. As with all Prather boats, the Lap Cat I features epoxy glass construction, joined deck and hull, and a complete step-by-step photo instruction booklet. A radio box kit and an accessory kit with virtually all of the accessories needed to complete the boat (less radio, engine, and finishing materials) are available. That accessory kit includes the radio box, seating tape, screws, outboard cable set, radio switch seal, fuel tank, antenna, prop, fuel line, and outboard motor mount.

Made of stainless steel, the racing fins (one for 30 to 39-inch boats, one for 40 to 50-inch boats) improve turning and add stability in the straights on deep vees and monos. They were developed by top competition boaters and were used to win the 1989 National Championships. They are for right hand turns only, so sport boaters should use the spin fins (Cat. No. 8117) that work for turning left or right.

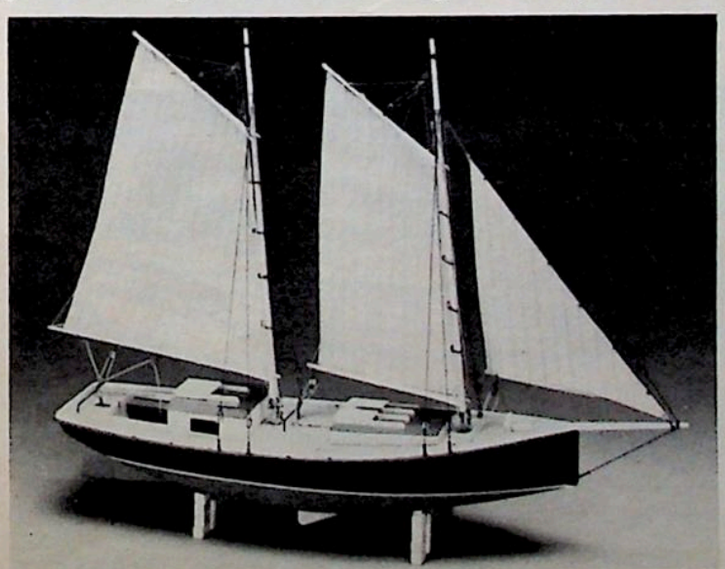
* * *

Parma International has introduced a 7-cell SCR kit for the Follansbee Hydro. These cells are computor matched for peak performance. You will notice a substantial increase in power and run time with these cells. Check your local hobby shop for Parma accessories, or contact Parma at 13927 Progress Parkway, North Royalton, OH 44133.

Large field box from Boxes Plus.

* * *

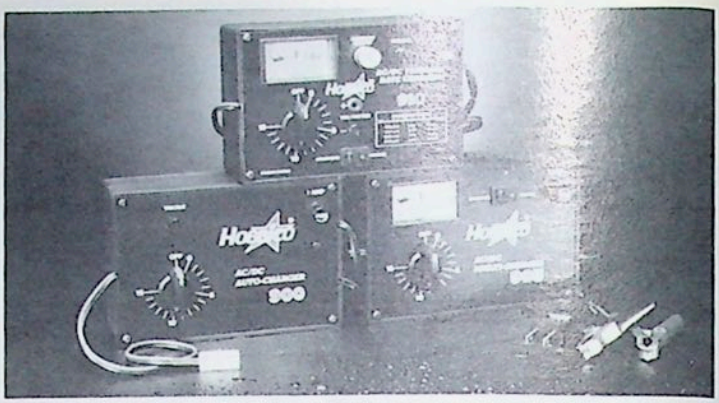
If you want to go to plywood construction without the normal weight penalty, check out "Mighty Lite" plywood, now available in the U.S. exclusively from House of Balsa, 20130 State Rd., Cerritos, CA 90701, or Frank Tiano Enterprises, 2460



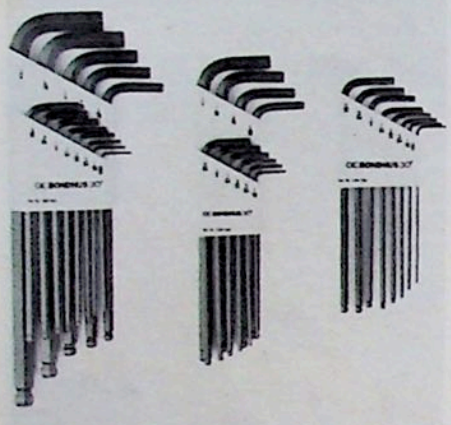
Sharple Schooner from Midwest Products Co. kit.

WW-II 110-ft. Subchaser Master Series kit from Dynamic Models.

Follansbee 7-cell matched Sanyo SCR from Parma Intl.



Three new AC/DC battery chargers from Hobbico.



Hex-head wrenches from Bondhus Corp.

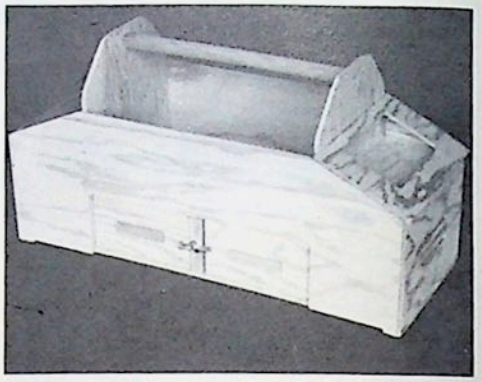
S.W. 85th Terrace, Davie, FL 33324. Frank is also the U.S. distributor for ZAP cyanoacrylate adhesives by Loctite.

Mighty Lite is a premium grade ply with a smooth grain finish and a new laminating process that is said to resist splintering, warping, and flaking. It is far lighter than 5-ply wood, yet affords the same strength when used in construction. The smooth outer surface allows faster preparation for final finishing. Mighty Lite comes in three sizes, all 1/8-inch thick; 6 by 12 inches, 12 by 24 inches, and 12 by 48 inches. If not at your local hobby shop, you may order direct from either of the two sources listed.

* * *

Most every active modeler, no matter what the field of interest, finds it necessary to gather together a bunch of favorite tools and accessories to take to the field, track, or pond for a day of racing, testing, or just fun-running. Sooner or later, it comes down to deciding whether to have one set of tools that you keep at the workbench and also tote to the operating site, or to accumulate two sets of tools; one at the workbench and the other set in a box or whatever to grab on your way out the door. In either case, a portable arrangement has to be made, and the better it is, the better prepared you are to make use of your equipment. Boxes Plus had this in mind when it came up with a variety of tool-carrying boxes to suit your requirements and help you to keep everything at hand so you can find it.

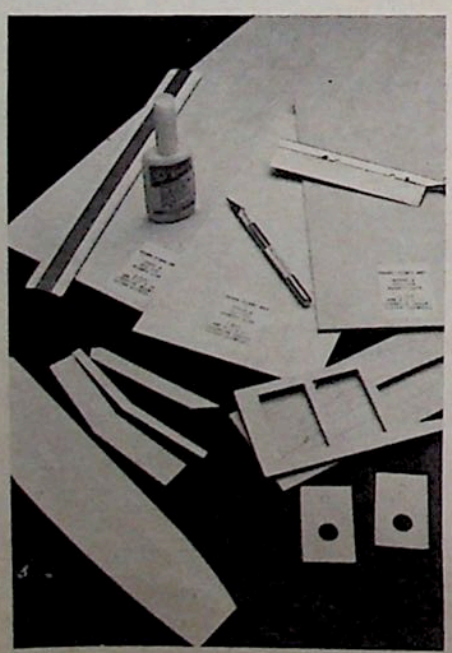
The DB-6D Storage/Field Box is the largest choice from BP Industries, or Boxes Plus, P.O. Box 521, Hubbard, OR 97032, phone (503) 982-0220. The overall size is 22 inches wide, 10-1/2 inches deep, and 17 inches high. Starting at the top is a 5-inch high compartment for large parts and accessories. Below that are six drawers in three different heights in which to organize and store tools and smaller accessories. Like all of the BP boxes, it comes fully assembled, pre-sanded, and ready for the finish of your choice. The suggested retail price is $89.95.



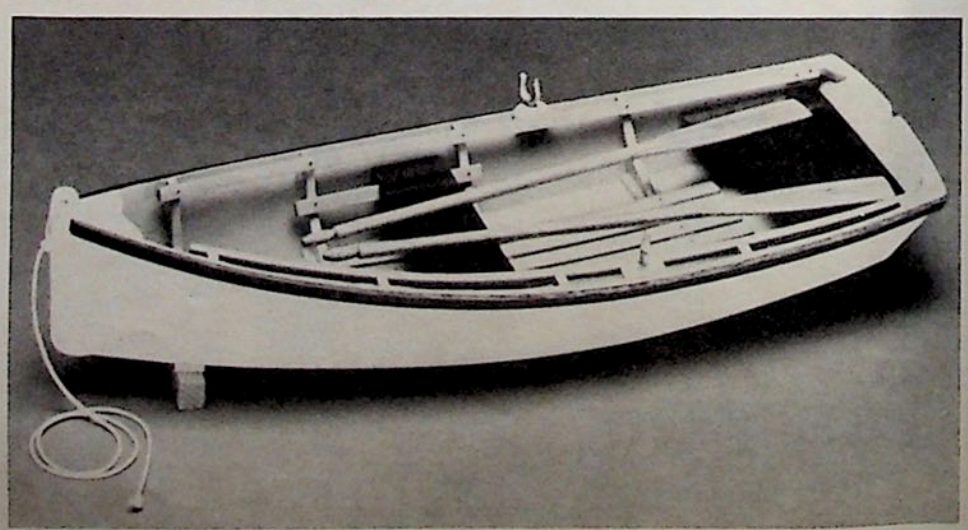
Smaller field box from Boxes Plus.

There are two smaller boxes that would probably be more suitable for the modeler who plans to have a set of "home" tools and another set for traveling. The MB-3D is also 22 by 10-1/2, but is 14 inches high. It has a deeper top compartment and three drawers for smaller items, and sells for $69.95. For the person who only needs a few items, or is not planning a long day of operation, the FB-2D may do the trick. This one has an open

Continued on page 39



Mighty Lite ply from Frank Tiano Enterprises.



Flat-bottomed rowing skiff, from Midwest Products "Success Series" kit.

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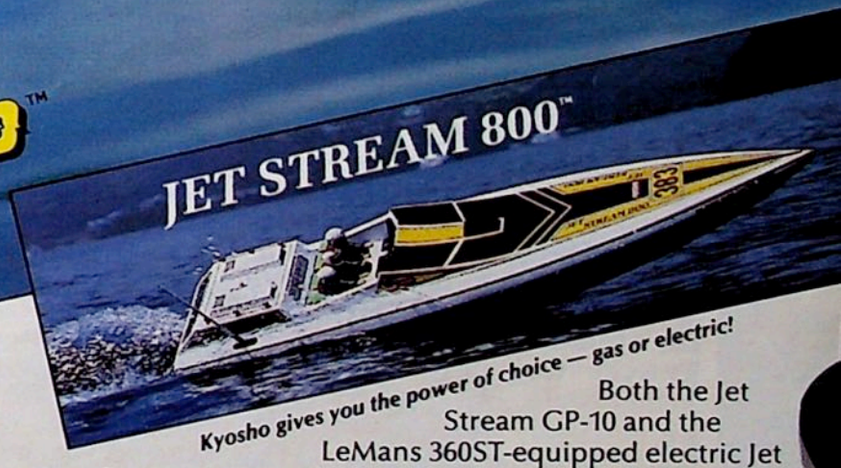

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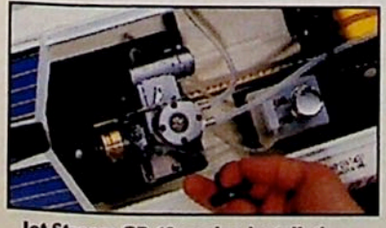
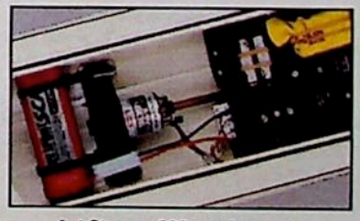
The new **Kyosho Jet Stream GP-10** gas-powered offshore racer lets you have it all. Incredible speed. Snappy, responsive steering. Easy starts and maintenance. *And* the realistic roar of a mighty gas engine adding the ultimate soundtrack for your water-spraying racing action.

The Jet Stream GP-10 supplies all the performance-packed technology of the original electric, including its breakthrough stern outboard drive. It also includes the O.S. .10 FP-M engine for the easiest gas-power fun you've ever experienced. Equipped with recoil starting, the engine will kick in with just a yank or two on the rope. Battery holder, glow starter, and fuel bulb are all included.



Jet Stream GP-10 engine installation.

Both the Jet Stream GP-10 and the LeMans 360ST-equipped electric Jet Stream come with a strong, light ABS plastic hull that can be painted in dazzling colors. Or, you can simply apply the included decals, designed to give each version a distinctively race-ready look. Assembly takes only a couple of enjoyable evenings.



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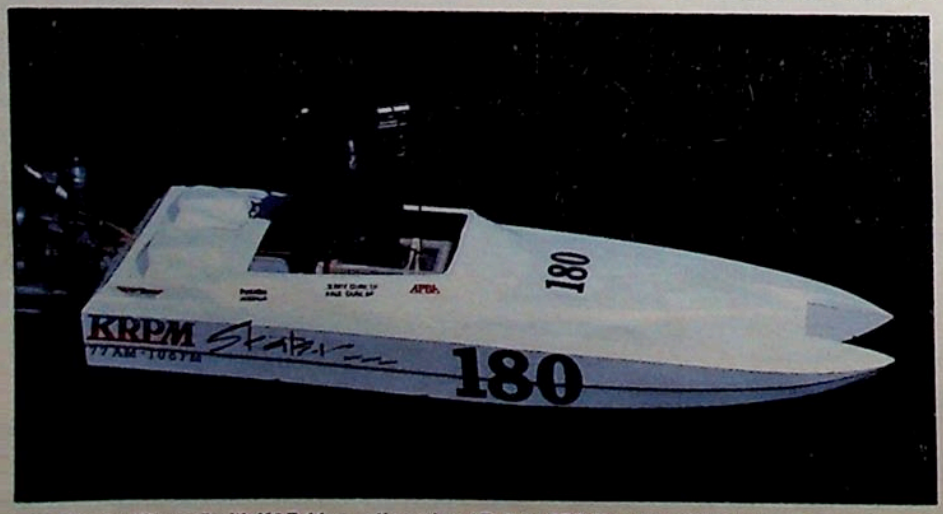
Dumas "SKATER"

By JERRY DUNLAP

In a small way, I had something to do with one of the new model boat offerings from Dumas Boats, the 40-inch Skater offshore catamaran. While attending the 1988 International Modelers Show (IMS) in Pasadena, I had the opportunity to have dinner with Jay Brandon. I'm not sure of Jay's official title with Dumas Boats now that his youngest son, Rob, is running the company. Maybe he's Chairman of the Board. Knowing Jay, he probably doesn't even have a title. But I rather suspect that after twenty-five years of taking care of the day-to-day operations of what has become this country's largest supplier of model boats, Jay appreciates his "semi-retired" status.

During the course of our dinner that evening, Jay asked for my thoughts concerning new boats Dumas might consider offering. We talked at length about Fast Electric and then I mentioned that he might want to consider adding an offshore catamaran to the Dumas product line. As Dumas likes to offer scale appearing models, I mentioned the "Dayton" from Eliminator Boats or the "Skater" from Douglas Marine. The Dayton and Skater are two very popular full size catamaran hulls.

Jay contacted Douglas Marine, in Douglas, Michigan, to see if they would be interested in allowing Dumas to make a model of their 32-foot offshore cat. Douglas Marine gave the project its blessings and the Dumas 40-inch Skater Offshore Catamaran was added to the Dumas line of model boats. My first opportunity to see the boat was at the 1989 IMS, one year after my discussion with Jay.



The Dumas "Skater" with K&B 11cc outboard and Futaba 2PD Magnum radio. Inboard or outboard installation is up to choice of builder.

The Dumas Skater is constructed using polyester fiberglass resin and cloth with a white gel coat finish. I had an opportunity to visit Dumas Boats in April and observe the fiberglass shop in operation. All Dumas fiberglass boats are made using hand lay up techniques. The Skater comes with the hull and deck joined and the wooden motor mount rail glassed in place.

As all the photo instructions and written directions provided with the Skater show how to install an inboard engine, I can only surmise outboard propulsion wasn't given a whole lot of consideration. I find this somewhat surprising, as most of the full-scale Skaters are powered by outboards.

Even though the Dumas Skater was designed for inboards from 11cc to 15cc, I personally think the model boater looking for a scale appearing offshore cat for sport running should give serious consideration to using outboard power. There are a couple of reasons for my recommending the K&B 11cc Outboard rather than an inboard.

One good reason for considering the outboard installation is cost. The K&B 11cc Outboard has a retail price only $5.00 more than the K&B 11cc Marine. All it takes to install the Out-

board is a Prather 7.5/11cc Outboard Motor Mount. Along with a motor mount, the inboard requires a hardware kit for the drive system and rudder, along with a tuned pipe.

Although it isn't a difficult task to install an inboard in the Skater, installing the outboard is really "a piece of cake." I took the Skater out of the box on a Friday afternoon and started to work. It was necessary to build a radio box, as I didn't have one, and this took the most time. Dumas Boats has a rectangular radio box that could be used. Auto body putty was used to attach the wooden transom plate to the inside of the transom. Holes were then drilled in the transom for the motor mount, rudder, and throttle linkages, and the fuel and pressure lines. Sullivan Golden Rod was used for the rudder and throttle linkages.

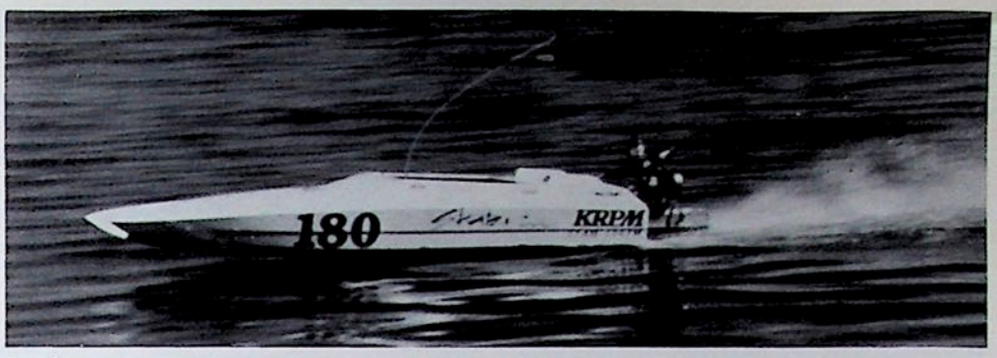
The white gel coat on the Skater is pretty well done. A quick "peel and stick" trim job allowed me to have the boat ready to run the following day. I would estimate I had no more than five hours total from the time I took the Skater out of the box until I had it ready to run. As I mentioned earlier, building the radio box was the singular most time-consuming aspect of the entire project.

The day after starting the Skater project, I ran the boat at a Fun Run in Portland, Oregon. It was blowing quite hard and the pond was rather wind chopped when I launched the boat for its first run. The boat took off just fine and ran somewhat "wetted down" with the initial prop angle. This ride was actually well suited for the water conditions. During that first run, I made turns to the right and left and the boat exhibited good turning characteristics.

On the second run, the prop angle was changed to lift the bow. With this setting, the boat was noticeably faster down the straightaway. However, it was necessary to reduce the speed to turn the boat because it wanted to slide through corners when it was "aired out."

For these initial runs, the motor was positioned at the lowest setting on the motor mount. An Octura X452 propeller provided the push and 50% fuel was in the tank. I didn't have much time to continue testing the Skater on Saturday at Portland as a race was planned. I decided to run the boat again the following day at the Kent Lagoon to try different props and motor heights.

Sunday's weather was really beautiful, with hardly any wind, and temperatures in the mid-80s. I made my first run with the same engine depth and prop as the previous day, with only a slight decrease in the prop angle to bring down the bow. The boat ran very well as I was able to find a better needle valve setting than I'd had on Saturday. At full speed, the boat would slide through a turn rather than hook up like my tunnel boats. However, by reducing the speed before starting the turn, the Skater cornered very well.



Just in case you had any doubts . . . yes, it do go fast!

I tried a higher engine height and X455 prop, but the result wasn't what I had hoped it might be. The boat wasn't as stable running in a straight line and tended to hook out in the corners. With the same prop and a low engine height, the motor wouldn't unload like it did with the X-452. I also tried an X-447/3 bladed prop but it didn't seem to work as well as the X-452.

As my Skater was set up using outboard power, I asked Karl Morse, a well known model boater from Tucson, Arizona, about running the Skater with inboard power. Karl told me he has run Skaters with single 11cc Inboards and twin 11cc motors. He stated the Skater's top end performance was good and its cornering was excellent. I mentioned to Karl that I had an outboard on my Skater and how easy this installation had been. Karl informed me installing the inboard wasn't all that difficult a project.

Inboard or outboard powered, the Skater offshore cat from Dumas Boats offers scale appearance as well as fine performance. For a model boater looking for a sport boat, I can highly recommend outboard power for the Skater.

THE FUTABA 2PD RADIO

I had the opportunity to use the new Futaba 2PD Magnum radio system on the Dumas Skater. I did substitute an S-34 servo for steering as the K&B 11cc Outboard requires additional power. The most noticeable difference in the new Futaba Magnum series is the restyling of the transmitter. My son, Paul, won a 3-channel Magnum Senior a couple of years ago, but neither of us liked the Magnum Senior transmitter as well as we liked the Magnum Junior transmitter. The old

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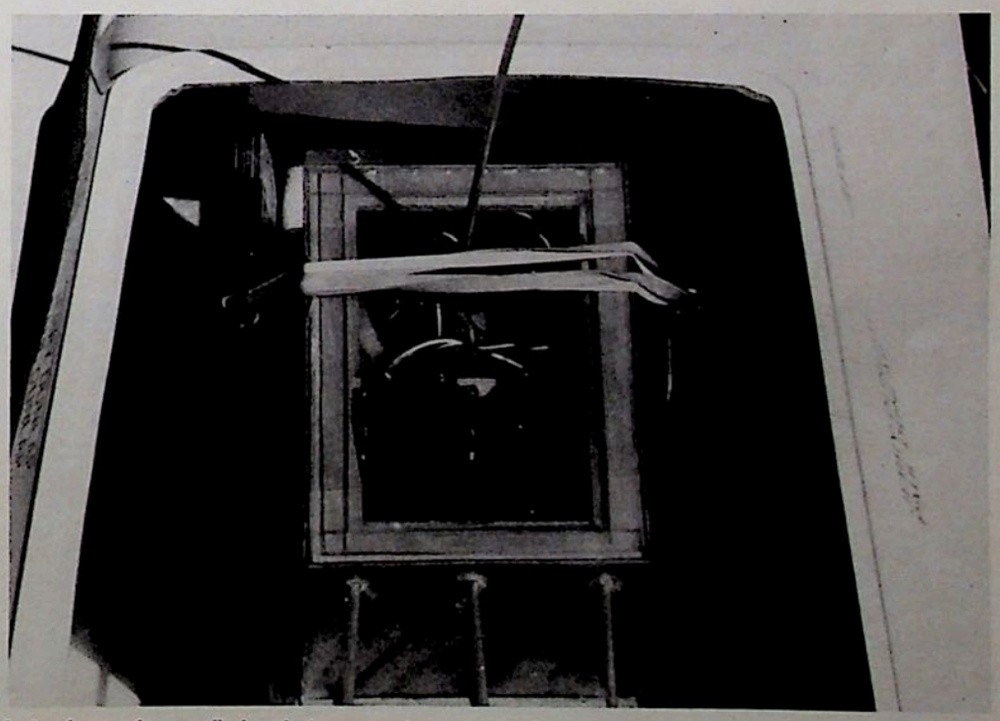

Lots of room for a radio box between motor mount stringers. S-34 servo used for steering. Sullivan Golden Rod used for linkages.

SEATTLE KINGDOME

Thriftway Kool-Aid Seafair Mini Gold Cup

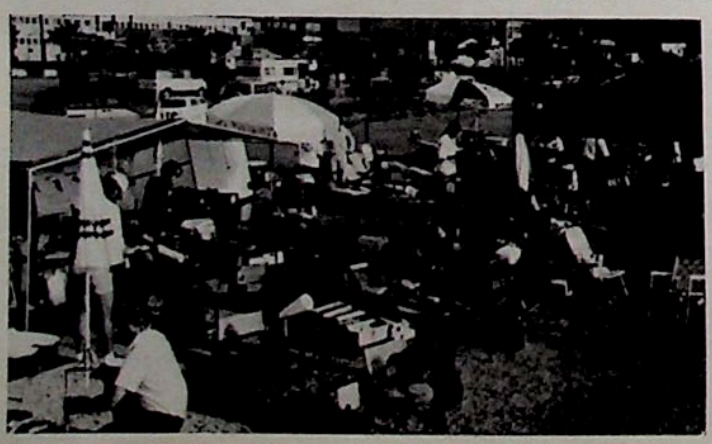
By JERRY DUNLAP

When it comes to sheer entertainment, it's difficult to imagine a model boating event with any more activities than transpired at the 1989 edition of the Kingdome Mini Gold Cup. How many model boating events feature fly-overs by the Navy's Blue Angels; a Little Richard impersonator performing on a stage in the center of the pond; jet ski and water ski demonstrations; and a Rubber Duck Race to benefit the March of Dimes? Seattle sports promoter Steve Lamson, once again acted as the catalyst to bring together all the necessary components to make the 1989 Thriftway Kool-Aid Seafair Mini Gold Cup a reality.

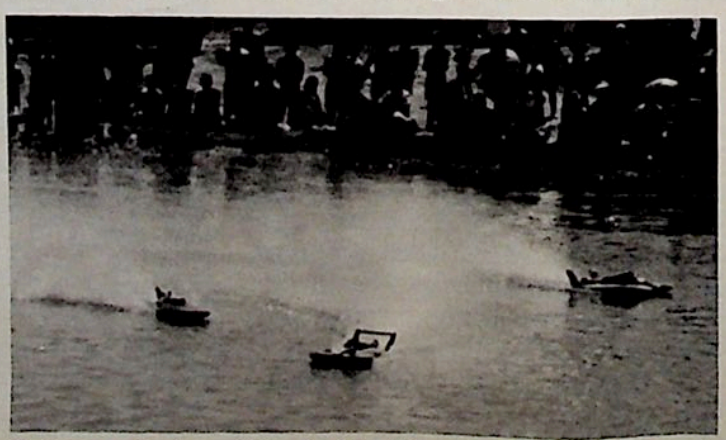
Using dirt remaining from indoor motorcross and offroad races, Roostertail Lake was once again created on a parking lot near Seattle's Kingdome. Created by the Santana Construction Company, Roostertail Lake is considered the world's largest man-made lake for a single day sporting event. Three hundred truckloads of dirt were used to form a lake 650 feet by 180 feet. Approximately 800,000 gallons of water filled Roostertail Lake to a depth of about 18 inches.

Besides the fifty-three 11cc Scale Hydroplanes featured in the racing action, other model boating action included sailboats, electric hydroplanes, maneuverings by destroyers and an aircraft carrier, and a sinking of a battleship. There was also a demonstration of a radio controlled helicopter. Booths were constructed for food and commercial exhibits ranging from hobby items to sweatshirts. Two unlimited hydroplanes used for display purposes were at the running site along with a 2.5 Liter Stock Hydroplane.

The 1989 Kingdome Mini Gold Cup was an official part of the Seattle Seafair activities and was promoted on television, radio, and in newspapers. On the evening before the Mini Gold



The pits were filled with 53 mini-unlimiteds, crews, and related racing accessories.



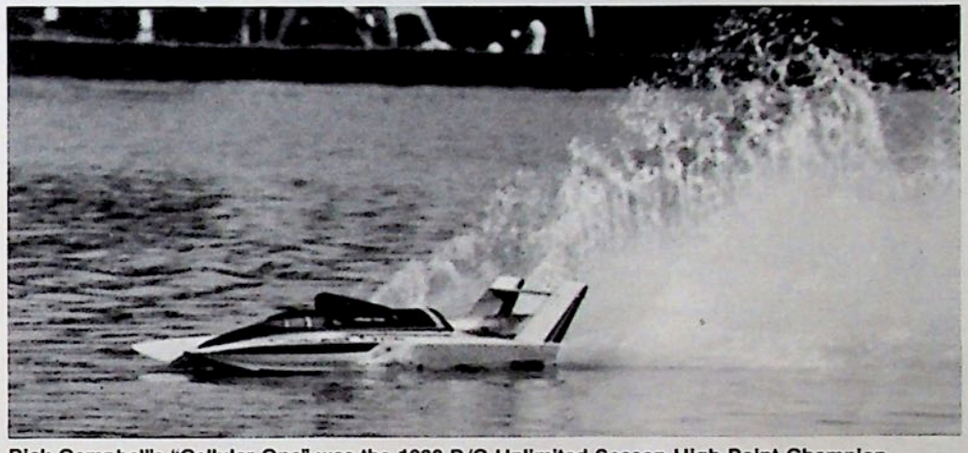
Right turn action in qualifying heat has "Coral Reef," "Miller American," and "Cellular One" departing from Turn Four.

APBA 11cc Scale Unlimited National Champion for 1989, Jim Auguston, won CD player for fastest qualifying time, but a DNF put him out of top 16 for semi-finals.

Top four finishers at 1989 Mini Gold Cup (l to r): Terry Olding and "Tosti Asti," 3rd; race winner Sam Defilips and "Stuphen Spirit"; David Jensen and "Pay N Pak," 2nd; and Ron Davis with "Competition Specialties," 4th.

Cup, fifteen model Unlimiteds were towed on wagons along the parade route of the Seafair Torch Light Parade. This very popular parade is viewed by hundreds of thousands of spectators.

The publicity paid off as over 6,000 people lined the shoreline to view the racing action as well as all the other activities taking place on, around, or above Roostertail Lake. Although no one seems to know for sure, it would appear the 6,000 spectators in attendance would be the largest crowd to ever witness an event conducted strictly for radio controlled model race boats.



Rick Campbell's "Cellular One" was the 1988 R/C Unlimited Season High Point Champion.

Each of the participating R/C Unlimiteds was afforded the opportunity to compete in three qualifying heats. The heats were limited to four boats each because the Roostertail Lake course was much more restricted than a typical race site. After three rounds of qualifying heats, the top sixteen boats were placed in four semi-final heats. The winner of each of the four semis would comprise the final heat. It took a score of 850 or better to make the top sixteen. This meant that a Did Not Finish in one of the qualifying heats ended any hope of making the finals.

In spite of the cramped race conditions, there were some excellent races generating yelling and cheering from the spectators. Race announcer Steve Montgomery's considerable knowledge of unlimited hydroplanes proved both insightful and entertaining. Former unlimited racer, Steve Reynolds, provided color analysis. As it was possible to clear the course quickly of boats that failed to finish, the pace of the race was brisk. Assistant District 8 Director Tom Dudley served as event director. Helping Tom keep things moving along were Seattle Model Yacht Club members Rick Dahl and Bill Hornell. Jim Burba, a past commodore of the Puget Sound Model Boat Club, served as Pit Boss. Other District 8 members helping to run the race were Dennis Caines, Mark Anderson, Dave Solway, and Doug Smith.

After the spray from the qualifying heats had settled, the following drivers and their boats advanced into the semifinals: Terry Oldin, "Tosti Asti"; Jerry Logan, "Harrah's Club"; David Jensen, "PayN Pak"; Roger Newton, "Hawaii Kai"; Ron Davis, "Competition Specialities"; Rocky Fridell, "Miller American"; Bill Smiley, "Gilmore Special"; Robbie Roberts, "Miss Vernors"; Noel Struthers, "Thriftway Too"; Gary Jensen, "Red Man";

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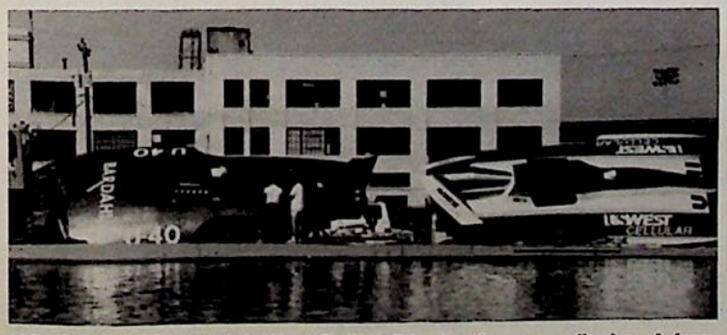
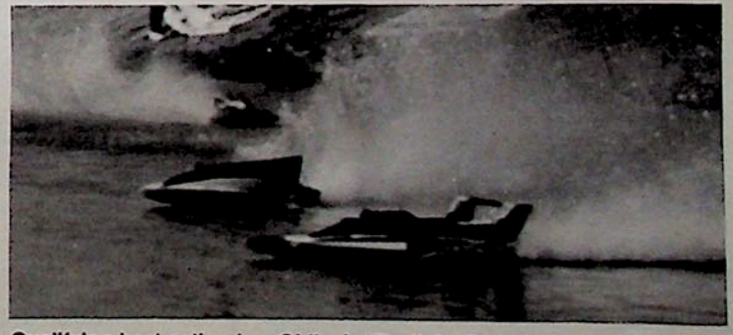


"Miss Bardahl" and "U.S. West Cellular" hydroplanes on display. A few years between design concepts.



Qualifying heat action has Olding's "Tosti Asti" leading Noel Struthers' "Thriftway Too" and Roger Newton's "Hawaii Kai." Busy!

WING SAILS

By FRANCIS REYNOLDS

This article appeared as one of a monthly, ongoing series in a companion RCMB INC. publication, Model Builder, *a model aircraft magazine, under the title, "Model Design & Technical Stuff." The author is a retired Boeing Aerospace engineer, and the material in this particular article caught us completely by surprise, as we had no idea that he had "played" with model sailboats. Of course, we should have been forewarned about his versatility by another of his articles, which we also published a couple of years ago, on a completely detailed and fully radio controlled Manitowoc crane, weighing 172 pounds!*

Anyway, we felt the occasional reference to model aircraft in this article is justified, and should remain. wcn

Last night I attended a dinner meeting of the American Institute of Aeronautics and Astronautics, a professional organization I have belonged to since 1941. The speaker was Arvel Gentry, an internationally known aerodynamicist. His subject was, "The Application of Computational Fluid Dynamics to Sailing Problems." If that is just a lot of big words to some of you, CFD is the technical study of aerodynamics and hydrodynamics by means of computers. In addition to working full time in aerospace aerodynamics, for the past 20 years, Gentry has been privately applying CFD to sailboats. He is a sailor himself, having been involved with the America's Cup 12-meter yachts, and has applied CFD to the wing sail of the 1988 winner, "Stars & Stripes."

CD Min's predecessor (1954) was this catamaran, called "CL Max." Wing construction on both boats is balsa with doped silk covering.

THE THEORY OF LIFT

As an aside, Mr. Gentry concluded from his studies that some of the accepted theory for aerodynamic lift was wrong! Ken Runestrand spoke of the same thing in his "Big is Beautiful" column in RCM for December 1988. This is not the place for details on that upset, but suffice it to say that it was fun watching top notch aerodynamicists argue about it last night, quoting Bernoulli, Kutta, and Prandtl, in defense of their positions.

This report on the AIAA lecture will serve to introduce some work your columnist did on sailboat design years ago; R/C model sailboats of course. I don't know if I need to defend talking about boats in this column or not, but if I do, the justification is that this is model design, it is technical stuff, and it is aerodynamics.

In 1950 I decided to take a crack at radio controlled model yacht racing. I put a single-tube receiver in a conventional model racing yacht and developed a feedback servo system so that the sails were set automatically from wind direction information provided by an on-board weather vane. I won the national trophy in 1952.

WING SAILS

My "first mate" that year was a fellow Boeing engineer, Coe Wescott. He then decided to race a boat of his own, and the next year he took the national cup away from me. That aroused my competitive spirit. I decided I would probably never be an expert tactical sailor, but I was an engineer and a creative person, so I should go with what I had and design a better boat. How about an airplane wing for a sail? The logic behind that question was quite simple. Airplanes and sailboats both operate by forces developed on a surface moving through the air, one developing a vertical force and the other a horizontal force. The art of sailboat design is thousands of years old, and has changed relatively little over the years. On the other hand, the science of aeronautics is less than a hundred years old, and has seen tremendous progress. Since airplane wings are high tech, they might make better sails than traditional sails.

"CD Min," second of the author's two winged sailboats, designed and built 35 years before the 'Stars & Stripes' winged catamaran of America's Cup fame. The wing sail features multiple or cascaded slotted trailing edge flaps (see diagram below). The small weather vane at the top feeds wind direction information to the sail control servo, which automatically compensates to keep the wing in optimum trim at all times. Described in detail in text.

A little study showed me that a racing sailboat (with a limit on sail area), must operate near the maximum lift of a high-lift sail system if it is to be competitive. This is quite different from an airplane, which operates at a very low lift coefficient most of the time, getting up near CL max only at takeoff and landing. The published data on high lift airfoils and high lift devices at very low Reynolds numbers was somewhat scanty, and there was another restriction that

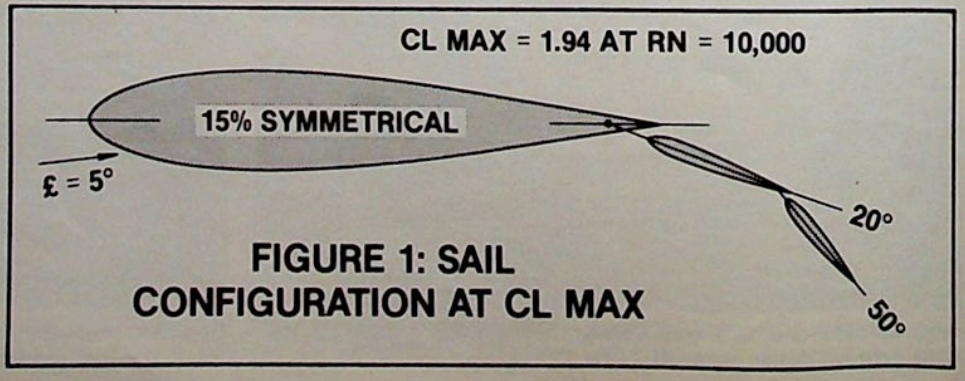
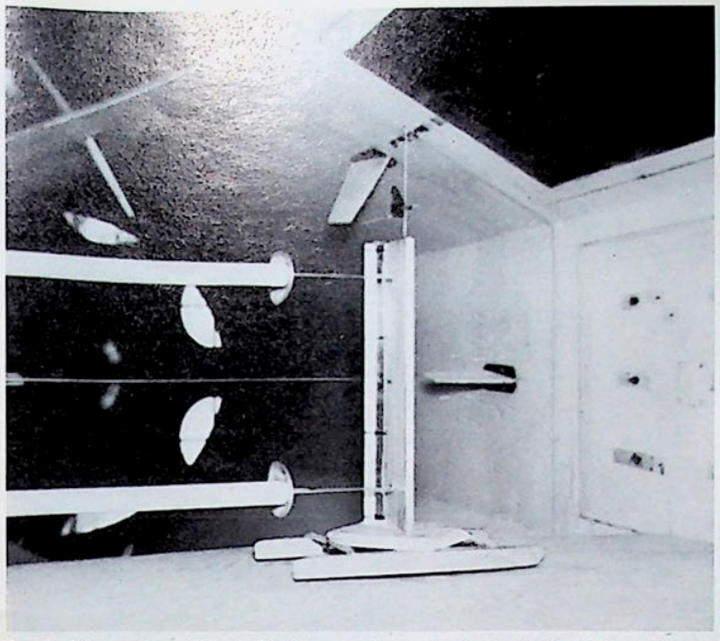


FIGURE 1: SAIL CONFIGURATION AT CL MAX



A wind tunnel model of CL Max undergoing tests at the University of Washington. Multiple trailing edge flaps showed best results.

The "boom," or bottom of the wing sail seals against the deck to prevent air passage and subsequent loss of "lift." Note rounded deck edges.

most airplanes don't have to contend with. A sailboat must sail equally well regardless of which side the wind is coming from, therefore the sail airfoils and any high lift devices must be fully symmetrical. What I really needed was a wind tunnel to study various symmetrical airfoil and flap configurations at low Reynolds numbers.

WIND TUNNEL TESTS

Talking my way into one of the University of Washington wind tunnels wasn't difficult, because the head of the Aeronautical Engineering Department was interested in sailing and wanted to see the data I would get. I first built and tested a tunnel model of a conventional, sloop-rigged racing sail boat with cloth main sail and jib, to find out how good the competition already was. It showed a maximum lift coefficient of 1.25 at a Reynolds number of 10,000, not bad for ancient "technology."

(Which reminds me . . . Al Doig, formerly the writer of the "Soaring" column in *RCM,* told me a true story the other day. A would-be designer was talking to an old-time modeler about a unique scale model he wanted to build and test in order to get data applicable to a full scale airplane. The modeler warned him about Reynolds number scale effects. Our beginner said that his tests wouldn't be affected, since he intended to make the model of fiberglass, not Reynolds Metal. I thought that one needed to be passed on by another Reynolds.)

When I built and tested a tunnel model of an NACA 0015 section wing at this low model-sailing RN, I got a max CL of only .80. So far, conventional sails win by a mile! The addition of a symmetrical slotted trailing-edge flap boosted CL max to 1.25, but I had to build a better sailboat, not just equal existing ones. I tried turbulence wires at the leading edge with no success. A leading edge slot device was also tried, but because of the constraint of full symmetry, it didn't show a net gain. The next step was to add a second trailing-edge flap behind the first one. In trying a great many combinations of areas, angles, gaps, thicknesses, etc., in sixty some tunnel tests, a CL max of 1.94 at an RN of 10,000 was finally obtained; fifty five percent better than a conventional sloop rig! All of this took several months. The final, and best configuration, is shown in Figure 1.

MODELS

I designed, built, and sailed two R/C models with this wing-sail and cascaded-slotted-flaps configuration; the first was a catamaran. The second and most successful had a single fiberglass hull, aluminum keel fin, lead keel weight, aluminum cantilever mast, and a balsa and silk wing sail. Have a look at the photos. Is it beautiful to you? "CD Min" is the name, and of course, stands for minimum coefficient of drag. The earlier catamaran was named "CL Max."

I raced CD Min for five years and never placed lower than third in national competition. That was 35 years before Dennis Conner's "Stars & Stripes" beat New Zealand with a wing sail in the 1988 America's Cup Race.

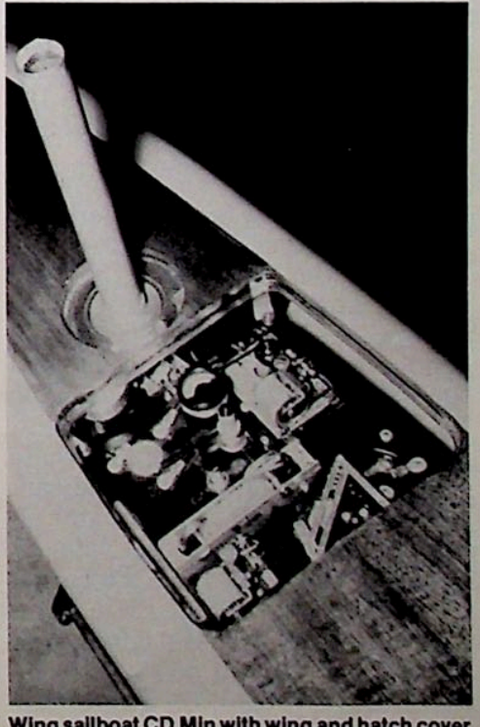
BIG BOATS

HAVE ADVANTAGES

Those in the Model Yacht Racing Association of America made me accept a sail area handicap before they would let me compete with a radical-design model. I was limited to 1000 sq. in. of sail area, while my competition was racing with up to 2400 sq. in. Perhaps the worst part of that penalty was that my sail was shorter. Because of friction, the velocity of the wind is low near the surface of the water. I tended to be sailing down in the doldrums, while the rest of the fleet could stick their tall masts up where the wind was beginning to blow.

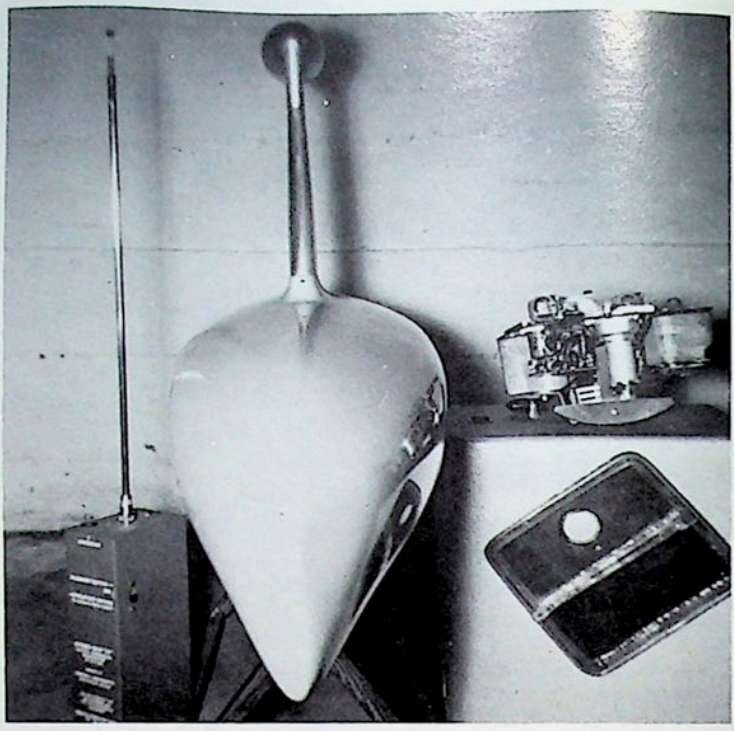
BOOM HEIGHT

There are a number of other fea-



Wing sailboat CD Min with wing and hatch cover removed. Note maze of control equipment in hull.

ional Champion
mited to fraction



CD Min's hull inverted to show smooth lines. Old single-channel transmitter at left. On-board electronics at right, hatch cover below.

veen wing panels and the fuselage a no-no. A big gap under a sailboat m is a huge no-no, if anything can one to eliminate it. On my model, uld.

LL AERODYNAMIC RBULENCE

n addition to a high boom, manned boats have a sharp angle between deck and the sides, and a railing und the deck, again to keep people m falling off. This really messes the air flow around the hull. I n't need the fence. You will also in the photos of CD Min that the k is rounded laterally and longiinally so the air can flow smoothly efficiently into the lower part of sail.

PYING vs. CREATING

he message here is that unless are building a scale model, don't ndly follow what full-scale vehicle igns look like, whether they be nes, boats, or whatever. Examine reasons for the big ones being dened the way they are, and ask rself whether those reasons apply your model. In many cases this d of effort will result in greatly proved model designs. I keep telling self that I'm not designing toy airnes that need to look like real airnes. I'm designing small, remotetrolled flying machines to meet cified goals, and I won't know at they will look like until the dens are complete. I am sorry for igners who feel they must copy -scale practice in order to be happy h their models. This mind-set greatly limits the creativity of their designs and the progress they can achieve.

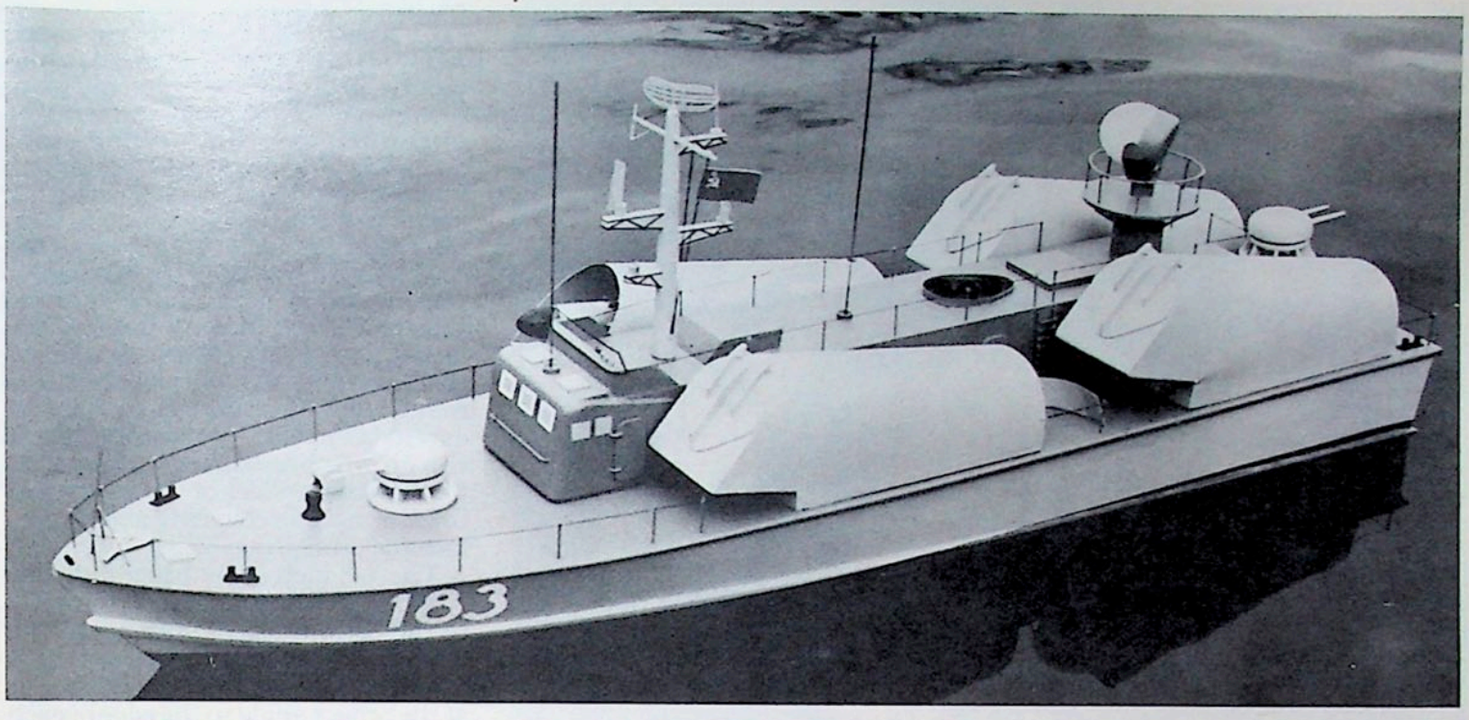
WEATHER VANE

I wanted to put the vane, which gives wind direction information to the sail servo, up at the masthead, "where the wind is undisturbed by other parts of the boat." I soon realized, however, that even there the airflow will be disturbed by the vortex off the wing tip. A simple solution to that problem was evident, however, so to the masthead went the vane. I couldn't eliminate the vortex, but I could compensate for it. I put a scale vane on the top of the wind tunnel model with a protractor behind it. For each wind tunnel data point, I read and recorded the angle between the tunnel axis (wind direction) and the vane. These figures were the errors in the wind direction readings due to tip vortex. When I designed the linkage between the vane and the electrical feedback system to the sail servo, I simply incorporated the angular errors due to vortex into the design, but with negative phasing. Now the vane angle is still in error, but the linkage corrects for it, so the sail is always set correctly. Solutions like that are fun and rewarding.

HULL DESIGN

My ignorance of hull design was nearly total, and the books I could find on the subject didn't answer all my questions, so I planned and conducted a series of tow tests on the

Continued on page 59



Russian OSA Missile Boat

By WALT MUSCIANO . . . Part Two of the Russian missile boat story, covering the construction of a model of this little known weapons system. Features a live-firing missile!

The full-size Russian missile boat can launch up to four Styx cruise missiles from combined hangar/launchers. These Soviet boats revolutionized the existing concepts of naval warfare when an Egyptian operated missile boat sank an Israeli destroyer in just a few minutes with four direct hits. The Osa Fast Patrol Boats-Missile are the advanced state-of-the-art, and are the David in the "David and Goliath" contests envisioned by today's naval strategists. The Osa boat and Styx missile story appeared in the Fall '89 issue of *U.S. Boat & Ship Modeler,* complete with rare photographs of the Osa boats and Styx missiles. Our model is built to a scale of 1/4-inch equals one foot.

CONTROLS

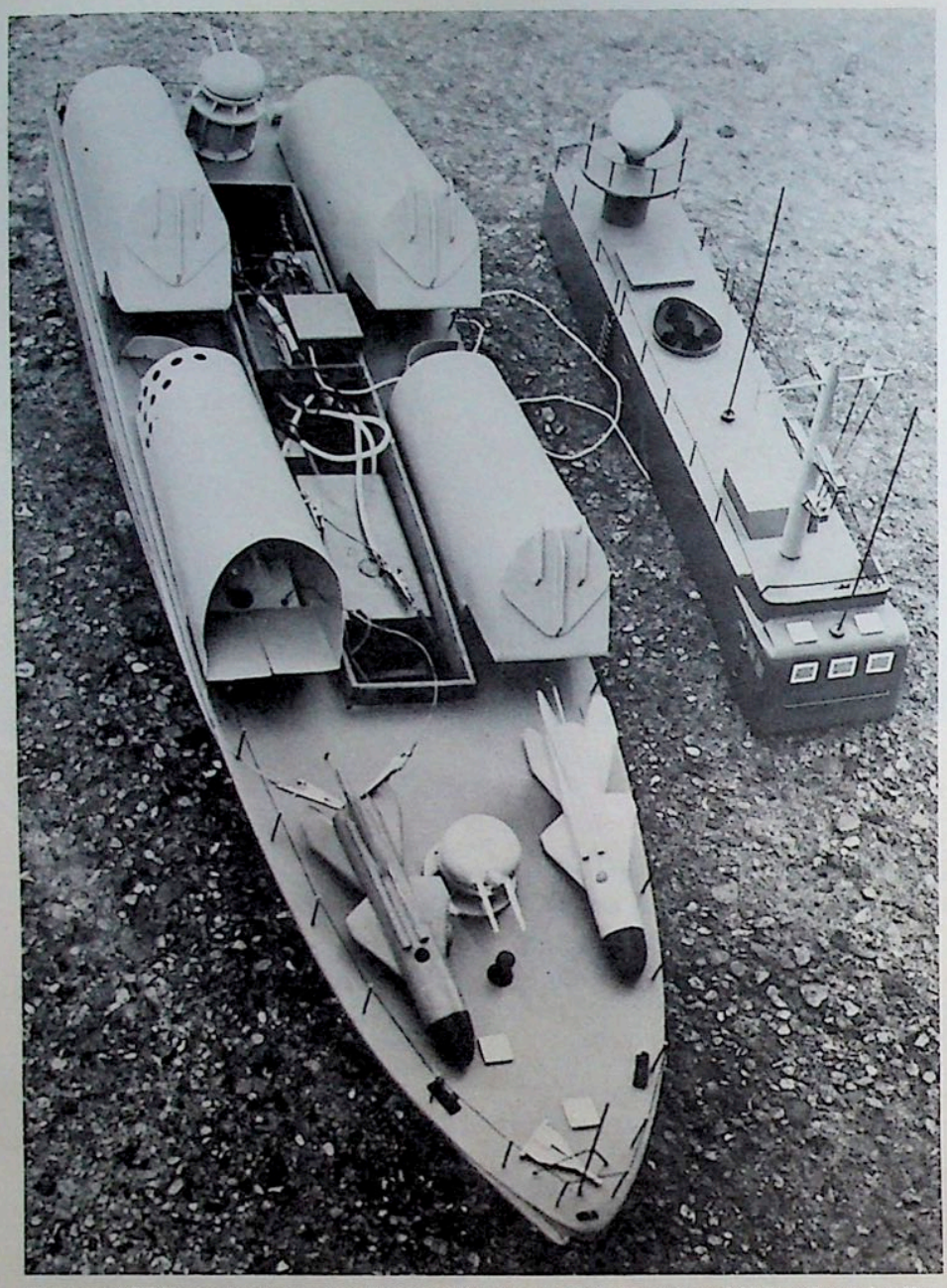
R/C operation of our model includes steering, proportional speed control (plus astern operation), and the launching of a model Styx missile from one or more of the hangar/launchers. This requires three channels; however, the missile launching is entirely optional, but it's great fun and creates a sensation every time you fire.

CONSTRUCTION

Construction of the Osa model is the epitome of simplicity using plywood and sheet balsa throughout with sheet aluminum and oak tag card for the hangars. There are no compound curves, and no planking is required. Power is by electric motor, so fuel proof liquids in construction are not mandatory. All metals in contact with water should be brass. Our model follows the full-size boat with three propellers and two rudders. If desired, one large motor driving a single propeller with one rudder can be successfully installed for simplicity.

The deck is the first component to be assembled. The wood grain should run athwartship (across from one side of the boat to the other) for added strength. Notice that the center of the deck is an open rectangle which runs between the coaming and deckhouse sides and the deck pieces should be assembled around this opening. It is necessary to edge join several 3/16-inch balsa sheets together to form the proper hull length because of the athwartship grain. When the cement is dry, check the deck outline and correct as necessary. Using sandpaper, smooth the joined sheeting, and note the rounded overhanging deck edge. Also notice that the deck tapers down toward the bow in the profile view. Lay the deck on a flat surface, cut the 1/8 x 3/4-inch balsa coaming strips to shape, and cement them to the inside edge of the deck opening and to the full depth (thickness) of the deck. Use plenty of cement and be sure to cement the coaming pieces to each other at the corners. The coaming is necessary to hold the superstructure in place as well as to prevent water from entering the hull should water inadvertently flow over the bow and onto the deck.

The keel is 1/4-inch thick. It is made from two layers of 1/8-inch plywood. Cut enough pieces to make two keels, and assemble the keel pieces along the splice lines. Each keel half is assembled separately and not joined until the shaft tube is installed. Notice the extra cutting away of the keel for the universal joint and the motor. Of course the shape of this cut-out depends upon the equipment used. Cut the center propeller shaft tube to length. Very carefully mark the location of the shaft tube on both keel assemblies. Be certain the marks are on the inner surface of the keel halves. Using a routing tool, such as an X-acto, cut a groove into each keel half for the shaft tube. Cut a little at a time, placing the tube into the groove periodically to check the fit. When the keel halves can touch with the tube in place, the keels should be well cemented or epoxied to each other with the tube between them in its proper position. Be sure to apply plenty of adhesive to the tube installation as well. Place weights on the joined keel halves until the epoxy



The model OSA's mechanics are revealed when the superstructure is removed. Note antenna lead to hatch, large battery, and receiver.

adhesive is thoroughly hardened.

The hull structure begins by cutting bulkheads "A" through "K" and the 1/8-inch chine pieces to shape. Note the grain direction. Although the plans show only one-half of the bulkheads, they should be cut in one piece from side to side. Of course, due to the limited balsa width, and the fact that the grain should run athwartship, a horizontal seam near the keel is necessary where the pieces must be edge-joined. Mark off the bulkhead locations on the assembled keel, then place the bulkheads on the plans, inverted, holding in place with pins driven diagonally through the bulkheads and into the workboard. Carefully place the keel into the bulkhead notches and check the alignment of all bulkheads. Apply plenty of cement to the bulkhead/keel joints and, when dry, recement all joints.

While these are drying, the chine pieces can be assembled at the splice lines and cemented into the bulkhead notches. Recement when the first application is dry. Using a sandpaper block, trim the chine flush with the bulkheads in preparation for the hull covering. Check all joints and recement as necessary.

The hull covering material is 1/8-inch sheet balsa. Note the grain direction which adds strength and facilitates the slight bending in the bow areas.

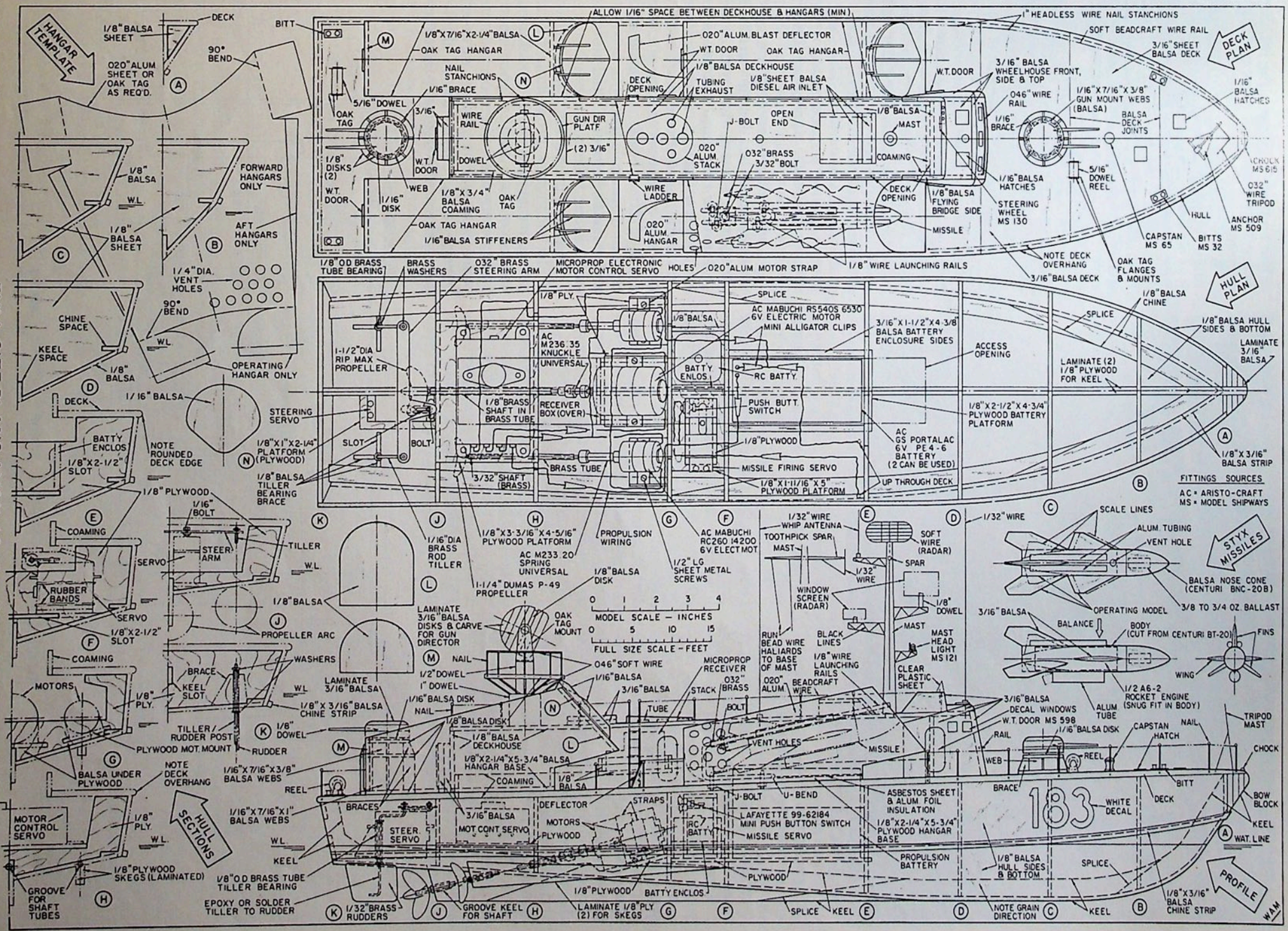
The bottom covering is applied first with the hull structure inverted. The only fitting required at this time is to bevel each piece of 1/8-inch sheet balsa to fit the keel as the sections illustrate. Begin covering the bottom amidships around bulkheads "E" and "F". Apply plenty of cement to the keel, chine, and bulkhead, then quickly press the first covering piece firmly in place, holding with straight pins until dry. The second piece should be the identical counterpart for the other side of the hull. Covering should progress foward and aft from the center pieces, on both sides of the hull, to prevent a possible bending or warping of the structure. Be sure to cement every adjoining piece to the previous covering piece as well as to the structure. All seams must be well cemented. When the entire bottom is covered, the edge of the covering at the chine should be sandpapered flush with the sides of the bulkheads to give the side covering a good surface for cementing.

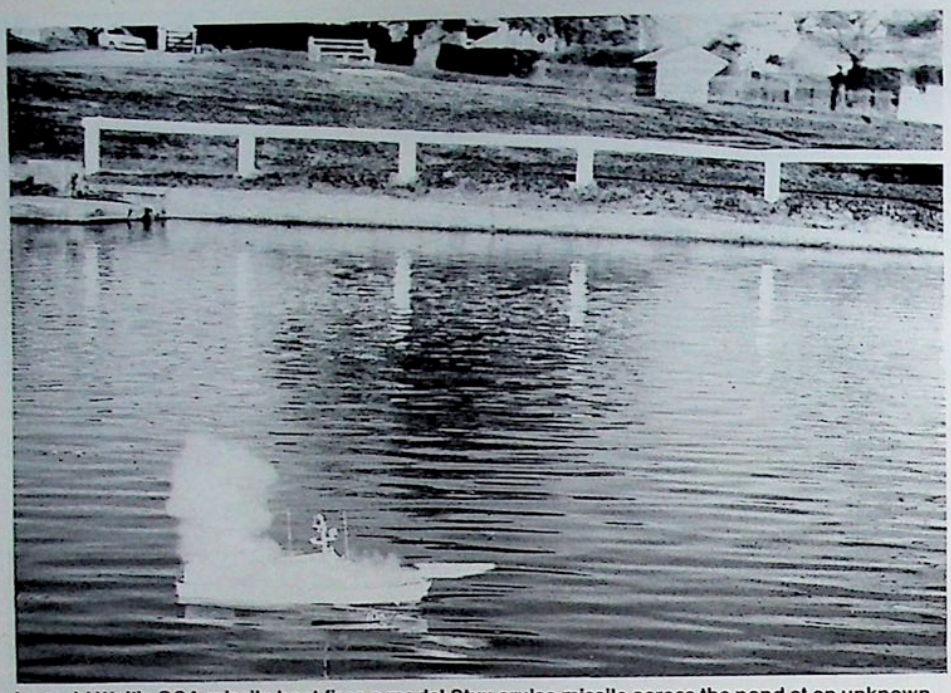
The 1/8-inch sheet balsa hull side covering pieces are installed similarly to the bottom pieces starting at the middle of the hull and progressing fore and aft. Each piece should be cut at the proper angle so the edge of each covering piece rests evenly on the work board as it is cemented to the inverted hull. The edge at the chine should be cut slightly oversize for trimming after the cement has dried. These are then cemented to the chine, bulkheads, and the edge of the bottom covering as well as to each other, using plenty of cement. The bow pieces must be bent slightly with the grain to follow the hull contours to bulkhead "A". Let the hull assembly dry thoroughly.

Remove the hull from the worktable and add the bow blocks to each side of the keel and bulkhead "A". We laminated the bow, but single piece blocks can be used. Sand the hull thoroughly with a sandpaper block. The chine strap is added next.

The hull interior consists mainly of supports and boxes for equipment such as the servos, batteries, receiver, etc. Before any work is done on the interior, all hull covering joints should be recemented.

It is a fact that all propeller shaft tubes fill with water, in full-size ships as well as models. If the point where the tube ends inside the hull is below the waterline, water will seep into the hull at a very slow rate . . . a matter of drops now and then on the average model. If water seeps into unprotected wood it will ruin a beautiful model by swelling and warping the wood, causing the exterior paint to crack and peel. In order to prevent this, the entire motor compartment, between bulkheads "G" and "H", should be well sealed with several coats of sealer and at least two appli-


HANGAR TEMPLATE
DECK PLAN
HULL PLAN
HULL SECTIONS
STYX MISSILES
PROFILE
ALLOW 1/16" SPACE BETWEEN DECKHOUSE & HANGARS (MIN)
1" HEADLESS WIRE NAIL STANCHIONS
SOFT BEADCRAFT WIRE RAIL
1/8" BALSA SHEET
DECK
BITT
90° BEND
020" ALUM SHEET OR OAK TAG AS REQ'D.
1/8"X7/16"X2-1/4" BALSA
OAK TAG HANGAR
NAIL STANCHIONS
1/16" BRACE
5/16" DOWEL
OAK TAG
3/16"
WIRE RAIL
DOWEL
1/8" DISKS (2)
W.T. DOOR
WEB
1/16" DISK
1/8"X 3/4" BALSA COAMING
OAK TAG
OAK TAG HANGAR
1/16" BALSA STIFFENERS
020" ALUM HANGAR
WIRE LADDER
020" ALUM BLAST DEFLECTOR
WT DOOR
OAK TAG HANGAR
1/8" BALSA DECKHOUSE
DECK OPENING
TUBING EXHAUST
1/8" SHEET BALSA DIESEL AIR INLET
GUN DIR PLATF
(2) 3/16"
020" ALUM STACK
032" BRASS 3/32" BOLT
J-BOLT
OPEN END
1/8" BALSA MAST
COAMING
DECK OPENING
1/8" BALSA FLYING BRIDGE SIDE
MISSILE
W.T. DOOR
3/16" BALSA WHEELHOUSE FRONT, SIDE & TOP
046" WIRE RAIL
1/16" BRACE
1/16"X 7/16"X 3/8" GUN MOUNT WEBS (BALSA)
BALSA DECK JOINTS
3/16" SHEET BALSA DECK
1/16" BALSA HATCHES
CHOCK MS 619
032" WIRE TRIPOD
1/16" BALSA HATCHES
STEERING WHEEL MS 130
5/16" DOWEL REEL
HULL
ANCHOR MS 509
CAPSTAN MS 65
BITTS MS 32
NOTE DECK OVERHANG
OAK TAG FLANGES & MOUNTS
3/16" BALSA DECK
1/8" WIRE LAUNCHING RAILS
1/8" OD BRASS TUBE BEARING
BRASS WASHERS
032" BRASS STEERING ARM
MICROPROP ELECTRONIC MOTOR CONTROL SERVO
HOLES
020" ALUM MOTOR STRAP
1/8" PLY
SPLICE
1/8" BALSA
AC MABUCHI RS540S 6530 6V ELECTRIC MOTOR MINI ALLIGATOR CLIPS
3/16"X 1-1/2"X 4-3/8" BALSA BATTERY ENCLOSURE SIDES
ACCESS OPENING
1/8" BALSA CHINE
1/8" BALSA HULL SIDES & BOTTOM
LAMINATE 3/16" BALSA
1-1/2" DIA RIP MAX PROPELLER
AC M236.35 KNUCKLE UNIVERSAL
BATTY ENLOS.
RC BATTY
LAMINATE (2) 1/8" PLYWOOD FOR KEEL
1/8"X 2-1/2"X 4-3/4" PLYWOOD BATTERY PLATFORM
1/8"X 3/16" BALSA STRIP
FITTINGS SOURCES
AC = ARISTO-CRAFT
MS = MODEL SHIPWAYS
1/4" DIA. VENT HOLES
90° BEND
CHINE SPACE
KEEL SPACE
1/8" BALSA
WL
FORWARD HANGARS ONLY
AFT HANGARS ONLY
OPERATING HANGAR ONLY
1/16" BALSA
DECK
BATTY ENCLOS
1/8"X2-1/2" SLOT
NOTE ROUNDED DECK EDGE
STEERING SERVO
1/8"X1"X2-1/4" PLATFORM (PLYWOOD)
SLOT
BOLT
1/8" BALSA TILLER BEARING BRACE
RECEIVER BOX (OVER)
1/8" BRASS SHAFT IN BRASS TUBE
BRASS TUBE
3/32" SHAFT (BRASS)
PUSH BUTT SWITCH
1/8" PLYWOOD
MISSILE FIRING SERVO
1/8"X1-11/16"X5" PLYWOOD PLATFORM
AC GS PORTALAC 6V PE4-6 BATTERY (2 CAN BE USED)
UP THROUGH DECK
1/8" PLYWOOD
1/16" BOLT
COAMING
STEER. ARM
TILLER
SERVO
W.L.
RUBBER BANDS
1/8"X2-1/2" SLOT
1/8" BALSA
PROPELLER ARC
WASHERS
BRACE
KEEL SLOT
1/8" PLY.
1/8"X 3/16" BALSA CHINE STRIP
TILLER/ RUDDER POST
1/8" DOWEL
RUDDER
PLYWOOD MOT. MOUNT
MOTORS
BALSA UNDER PLYWOOD
NOTE DECK OVERHANG
1/16"X 7/16"X3/8" BALSA WEBS
REEL
MOTOR CONTROL SERVO
1/8" PLY
1/16"X 7/16"X1" BALSA WEBS
1/8"PLYWOOD SKEGS (LAMINATED)
GROOVE FOR SHAFT TUBES
1/8" O.D BRASS TUBE TILLER BEARING
EPOXY OR SOLDER TILLER TO RUDDER
1/32" BRASS RUDDERS
1/16" DIA BRASS ROD TILLER
1/8"X3-3/16"X4-5/16" PLYWOOD PLATFORM
PROPULSION WIRING
AC M233.20 SPRING UNIVERSAL
1-1/4" DUMAS P-49 PROPELLER
AC MABUCHI RC260 14200 6V ELECT MOT
1/2" LG SHEET METAL SCREWS
1/8" BALSA DISK
LAMINATE 3/16" BALSA DISKS & CARVE FOR GUN DIRECTOR
OAK TAG MOUNT
MODEL SCALE — INCHES
FULL SIZE SCALE - FEET
NAIL
1/2" DOWEL
1" DOWEL
046" SOFT WIRE
1/16" BALSA
3/16" BALSA
MICROPROP RECEIVER
032" BRASS STACK
1/16" BALSA DISK
NAIL
1/8" BALSA DISK
1/8" BALSA DECKHOUSE
1/8"X2-1/4"X5-3/4" BALSA HANGAR BASE
COAMING
1/8" BALSA
TUBE
BOLT
VENT HOLES
MISSILE
DEFLECTOR
STRAPS
MOTORS
PLYWOOD
STEER. SERVO
MOT CONT SERVO
IRC BATTY
LAFAYETTE 99-62184 MINI PUSH BUTTON SWITCH
MISSILE SERVO
J-BOLT
U-BEND
ASBESTOS SHEET & ALUM FOIL INSULATION
1/8"X2-1/4"X5-3/4" PLYWOOD HANGAR BASE
PROPULSION BATTERY
1/8" PLYWOOD
BATTY ENCLOS
1/32" WIRE WHIP ANTENNA
TOOTHPICK SPAR
MAST
SOFT WIRE (RADAR)
SPAR
1/32" WIRE
WINDOW SCREEN (RADAR)
1/8" DOWEL
MAST
MAST HEAD LIGHT MS 121
RUN BEAD WIRE HALIARDS TO BASE OF MAST
BLACK LINES
1/8" WIRE LAUNCHING RAILS
020" ALUM
BEADCRAFT WIRE
CLEAR PLASTIC SHEET
1/32" WIRE
SCALE LINES
ALUM. TUBING
VENT HOLE
BALSA NOSE CONE (CENTURI BNC-20B)
3/8 TO 3/4 OZ. BALLAST
3/16" BALSA
OPERATING MODEL
BALANCE
BODY (CUT FROM CENTURI BT-20)
FINS
WING
1/2 A6-2 ROCKET ENGINE (SNUG FIT IN BODY)
3/16" BALSA
DECAL WINDOWS
W.T. DOOR MS 598
1/16" BALSA DISK
CAPSTAN
HATCH
NAIL
TRIPOD MAST
CHOCK
RAIL
WEB
REEL
ALUM TUBE
BRACE
BITT
DECK
BOW BLOCK
KEEL
WAT. LINE
183
WHITE DECAL
1/8" BALSA HULL SIDES & BOTTOM
SPLICE
1/8"X3/16" BALSA CHINE STRIP
GROOVE KEEL FOR SHAFT
LAMINATE 1/8" PLY (2) FOR SKEGS
NOTE GRAIN DIRECTION
KEEL
SPLICE
WAM



Launch! Walt's OSA missile boat fires a model Styx cruise missile across the pond at an unknown target. It follows a low trajectory.

cations of paint.

Plywood and balsa supports, boxes, and platforms are added now. These should be adapted to the equipment used and will not necessarily be identical to that shown on the plans if different equipment is installed. The supports can be painted if desired.

Skegs are made now if a triple screw model is desired. Cut four skegs from 1/8-inch plywood, mark off the shaft tube location, and cut grooves for the shaft tubes as was done with the keel. Sandwich the tubes between the plywood using plenty of cement, and set aside to dry. Mark off the skeg locations on the hull, make a hole for the shaft tube, and cement the skegs to the hull bottom. Note that the skegs are parallel to the keel in section view as well as the plan view. They are *not* perpendicular to the hull bottom, and therefore the top surface must be beveled to compensate for the sloping hull bottom.

The rudders are located directly behind the outboard propellers and are cut from brass following the outline in the profile. Make the bottom 90-degree bend of the four-inch long brass rod tiller/rudder posts, and solder to the inner surface of the rudder as shown in the profile. Epoxy can be used instead of solder if desired, but this must then cover a much larger area of the rudder, completely covering the rudder post.

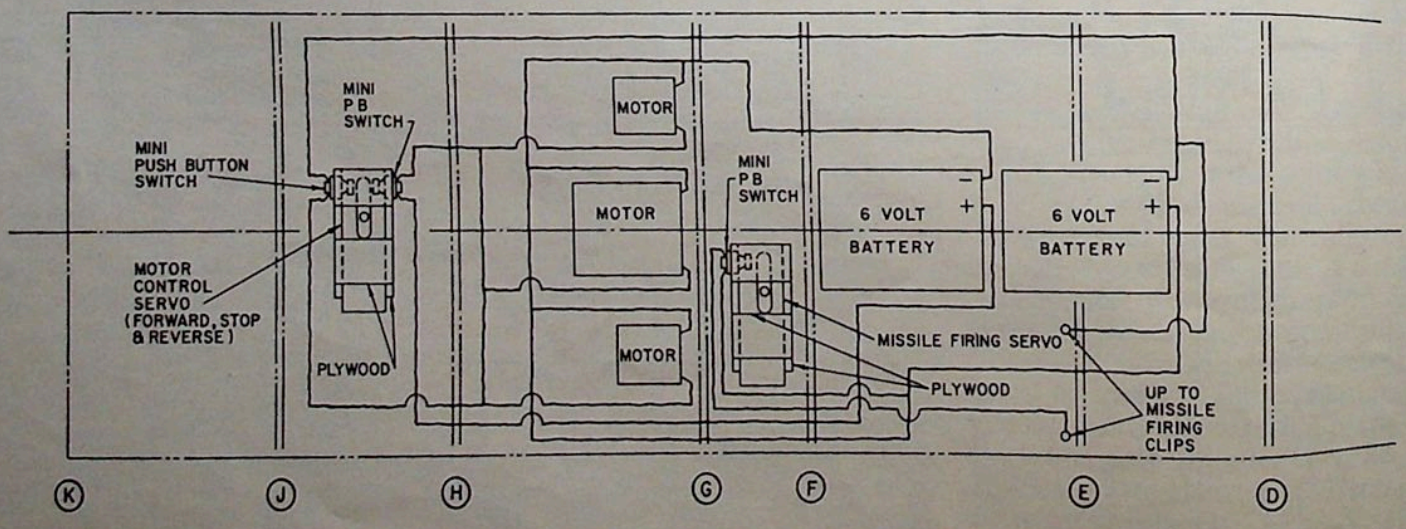
Cut the tiller bearing tube and the balsa bearing braces. Make holes in the bottom for the bearing tubes and insert the tubes, allowing about 1/8-inch to protrude from the hull bottom. The fit through the hull should be snug so the tubes will remain erect when so placed. Cement the inboard brace to the tube bearings and hull bottom.

While this is drying, gently slip the tiller/rudder post into the tube using it as a guide to ensure that the bearing tube is vertical. When the cement is dry, recheck the tube position and then add the remaining braces. This installation must be recemented several times and reinforced with cloth (or silk) and cement.

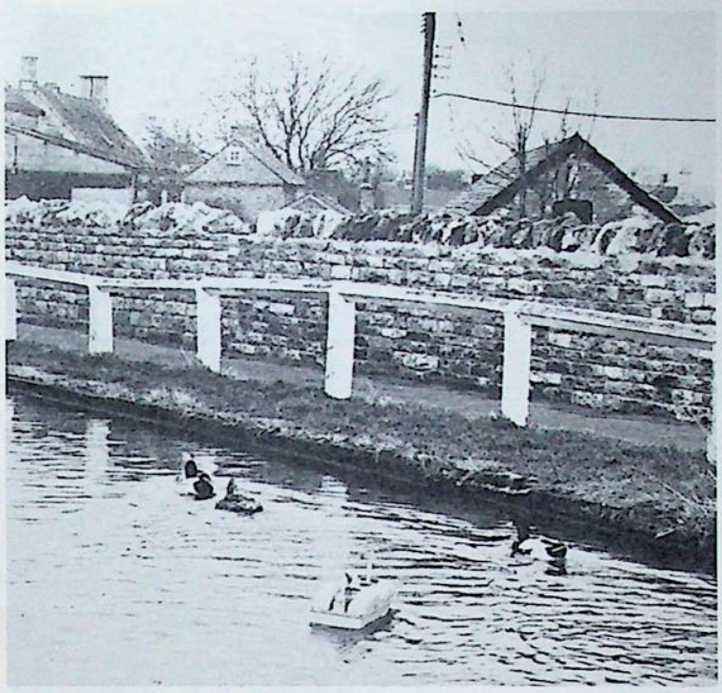
Place a brass washer on the tiller at the top of the rudder and slip the brass rod of the rudder assembly into the bearing tube. Hold the rudder up against the tube with a length of tape bridging the rudder to the hull. Pierce a small piece (1/2-inch square) of sandpaper on the tiller and slide it down to the tube and place a brass washer on top of the sandpaper. Very quickly, solder the washer to the tiller rod without excessive heating of the brass rod so as not to affect the solder or epoxy at the rudder. The sandpaper retained a space between the washer and tiller during soldering; remove it now.

Using small needlenose pliers, very carefully bend the tiller forward and then gently upward as shown on the profile. The tillers are connected to each other with a sheet brass steering arm or tie-rod. Notice the 1/6 x 3/8-inch slot for the servo arm pin. We used a 1/16-inch bolt, threaded into the servo arm hole from the bottom, and with the loosely fitted nut secured to the bolt with epoxy.

The propulsion drive train consists of electric motors, propellers, shafts, and univrsal joints. Our model used one large motor on the center shaft and two smaller motors on the outboard shafts. The motors we used have no integral mounts, so aluminum strips are used to strap the cylin-



ALTERNATIVE MECHANICAL MOTOR CONTROL WIRING



Of course we don't fire missiles at ducks! It's just fun to cruise around with them.

Walt Musciano shows the two Styx missile versions used with the OSA model . . . one is scale and the other is functional. See plans.

drical motors to plywood mounts prior to installation.

After the universal joint is attached to the motor, and the propeller to the shaft, the shaft is inserted into the tube and the universal connected to it. With the entire drive train connected from motor to propeller, the motor is maneuvered into position so that the universal is at its straightest and the propeller is about 1/16-inch from the end of the shaft tube. At this point, the plywood motor mount can be cemented to the hull structure, keel, and chine.

When the cement is dry, rotate the propeller by hand to be certain the shaft doesn't bind, then connect a battery to ensure good operation.

The space between the motor mount and the hull bottom is filled in with balsa wedges and firmly cemented. Check the shaft again and then apply cement around the motor installation. There is virtually no vibration with electric power, and therefore the rugged mounts used for reciprocating engines are not necessary.

Apply several layers of cement around the shaft tube at the point of hull penetration. Our propellers are epoxied to the shafts. If the hole in the propeller is too large, epoxy an aluminum or brass tube bushing between the prop and shaft.

The servos can be installed now. We held our servos in place with a dab of G.E. Clear Silicone Glue and Seal. This dries to a rubbery consistency, absorbs vibration, holds broad surfaces together very well, and does not affect plastic. The servos can be removed when desired with a slight twist and lifting motion. Of course, the servos can be screwed or bolted into place as desired.

The missile servo arm presses a spring-loaded push-button switch to close the circuit and ignite the missile. This servo is located between plywood pieces. The switch is mounted into the plywood in line with the servo arm. Rubber bands or tape can be used to hold the servo in place, or a dab of silicone will do. Check the operation of the missile firing servo to be certain it presses the switch.

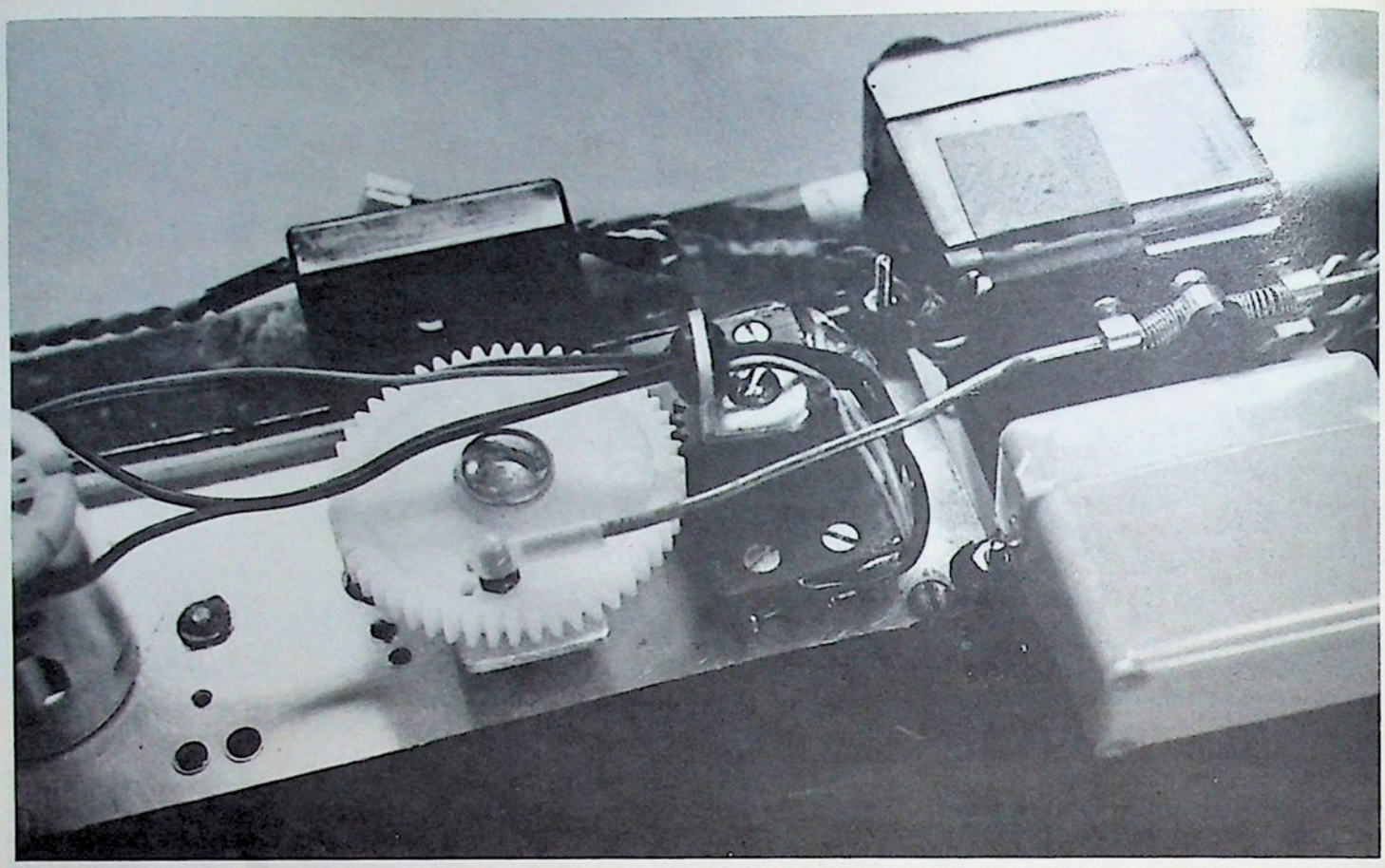
Propulsion wiring should be multistrand, insulated, and of a much heavier gauge than electronic wiring . . . almost like that used for electrical items in the home, such as lamps. We used mini-alligator clips here and there to enable equipment such as the batteries and the propulsion servo to be easily removed and used in other models. This is, of course, entirely optional.

The missile ignition wire can be thin because it must be flexible in the hangar.

Deck installation is started by fitting the deck to the hull and, when the location is correct with equal overhang on the sides and stern, the bottom of the deck is marked with the hull location as a guide for final cementing. We also marked off the bulkhead locations on the bottom of the deck. Place the deck, inverted, on the worktable, propped up with books or other flat objects to raise the coaming off the table and evenly support the deck. Use a relatively slow drying adhesive (we used Ambroid) and apply it to the inverted deck along the marks denoting the structure locations. Also apply cement to the upper edges of the bulkheads and hull sides. Quickly place the inverted hull atop the inverted deck in its proper location, pressing down gently to make a firm contact. When thoroughly dry (at least three hours), additional cement can be wiped into the external hull/deck joint for both strength and appearance. The deck should fair into the bow block with no overhang.

The deckhouse is a simple ⅛-inch sheet balsa box. Cut the sides, ends, and top to size. Notice that the house front is 3/16-inch balsa, and that the house extends beyond the deck opening. A 1/8 x 1-3/4-inch balsa house bulkhead is necessary to make the deckhouse fit the coaming properly, and it will act as a substitute house front. Pin this bulkhead and the house sides and rear to the sides of the coaming with the bottom edge of the house sides, rear, and bulkhead touching the deck. Cement these four pieces together *but do not cement them to the coaming or the deck.* Cement the house front to the sides followed by the deckhouse top.

Because of space limitations, coupled with the extreme length of this detailed construction article, we could not include all of it in this issue. Anyone purchasing the full-size plans and pattern prints (see ordering instructions on page 78) will also receive a reprint of the complete article. •

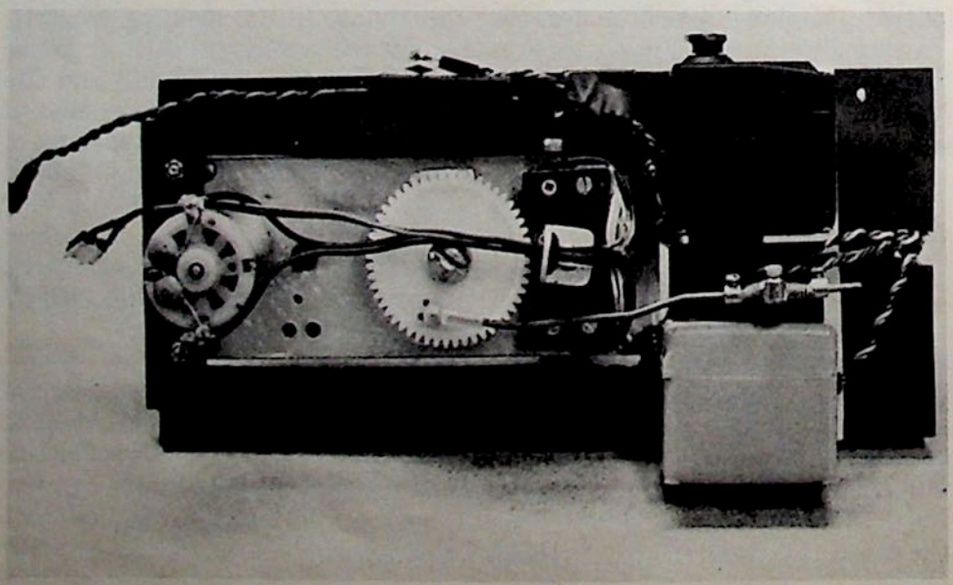


Bottom view of completed winch mounted on radio board with servos, receiver switch, and pushrod. Note "servo-saver" on pushrod, larger 380 motor, and the off-center position of ball link when winch rotation is centered.

"PROPORTIONALIZING" the Dumas Sail Winch

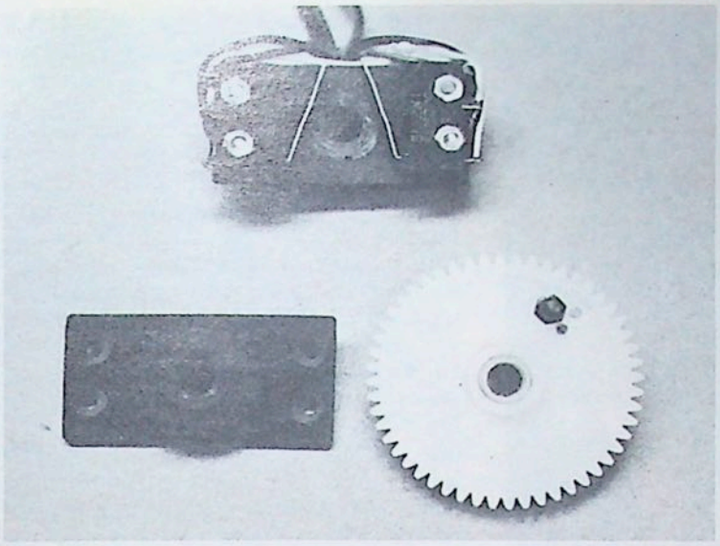
By WILLIAM WHITTEN . . . Dumas offers a proportional sail servo, but this is a less expensive conversion of the mechanical version, also applicable to most similar units.

The Dumas/Probar #3701 sail winch has long been popular with model yachtsmen in this country; it is relatively simple and reliable and is readily available. Its major flaw, to some skippers at least, is that it is not proportional. To be fair, Dumas has a somewhat similar servo-operated proportional winch, but its design limits the amount of arm rotation available and, like some of the other ways of making a mechanical winch proportional, it is somewhat prone to fouling sheet lines. Assuming you already have the #3701 or a similar winch, here is a way to make it operate in a manner close to an electronic-type, fully proportional unit without spending a bundle or needing a full machine shop.

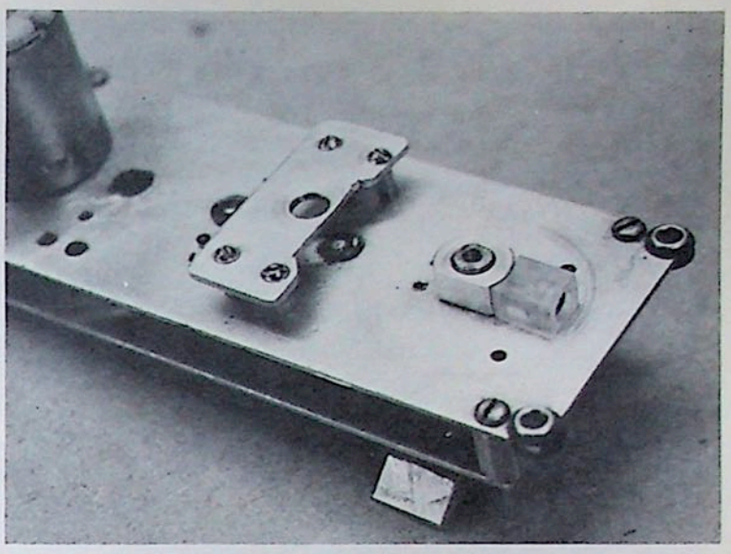


Another view of underside, not so close-in. Conversion is simple and uses easily available parts.

The basic idea isn't new; the two microswitches are mounted on a small plate over the winch cam so that they can rotate around the same axis as the main shaft. As the plate is rotated in relation to the cam, the cam arm will close one of the switches which turns on the winch motor, turning the main shaft and cam. As the cam arm catches up to the switch-plate, the switch returns to normal and stops the motor until the plate is again rotated around



Large gear with ball-link, top view of switch-plate without micro-switches, and bottom view of plate with switches and wiring.



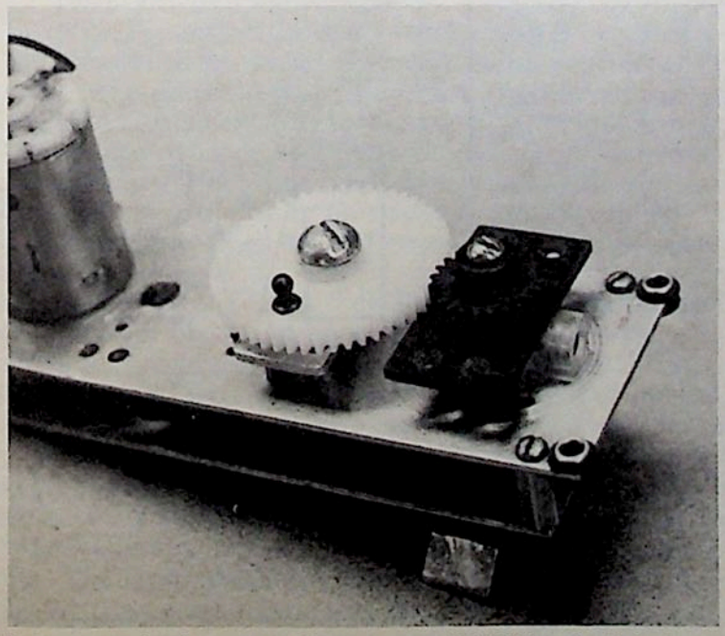
Bottom view of winch body shows mounting plate for large gear, modified cam with extension, and main shaft with drilled and tapped hole.

the cam. The more the switch-plate is rotated off center, the more the winch arm will then rotate (this is where the Dumas proportional winch design has problems; it is hard to directly rotate the plate more than about 100 degrees, which in turn limits the rotation of the winch arm). There are several ways to rotate the switch-plate; the easiest is to mount a gear on top of the plate which is driven by a larger gear, which is in turn linked to the servo via a pushrod. As all the mechanism is underneath the winch, it is out of the way and far less likely to snag a sheet line.

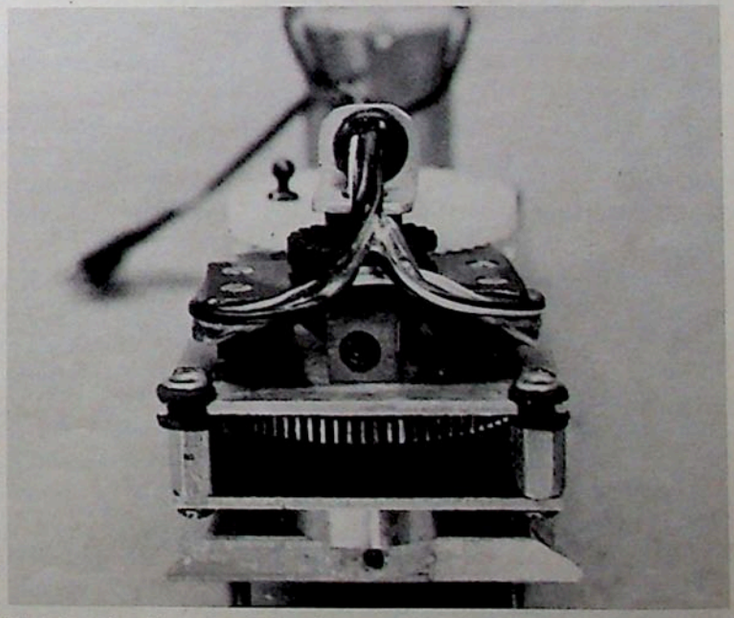
Begin by removing the two micro-switches and all the wiring from the winch intact. If for some reason you don't like the proportional setup, you can put it back the way it was with no trouble. While you have the winch out, it is suggested that you take time to clean and lubricate it well. Remove the cam from the main shaft and file the round side to match the flat side and replace the small setscrew with a longer one. Make an extension for the cam from plastic, wood, or aluminum as shown in the photographs (you can also make a whole new cam if you like). This is held on by the longer screw and will engage the two switch arms. Make sure the cam is secured tightly to the main shaft. Drill a hole in the end of the main shaft about 3/8-inch deep and tap it for a 4-40 machine screw. Be careful to get the hole centered in the end of the shaft.

Next you will need to fabricate the switch-plate. It is nothing more than a small rectangle (about 1-7/8" x 5/8") of 1/8-inch plastic or aluminum sheet with a gear right in the center (a friend made up a mold and cast a couple out of epoxy for me, but the gear can be attached to the plate with glue or small screws). You may be able to find one already mounted on a larger gear which can be trimmed down to serve as the switch-plate. The small gear should be half the size of the larger gear . . . about 3/4-inch diameter and about 1/4-inch thick. The large gear must have the same pitch teeth so they will mesh properly. Nylon or other plastic is best to save some weight. My gears came from the "junk box" . . . originally from some sort of surplus gearbox I bought years ago. Some of the gears for the R/C cars might work or maybe from an old electric can opener. The exact size isn't critical as long as the ratio is around 2:1, to ensure enough winch rotation.

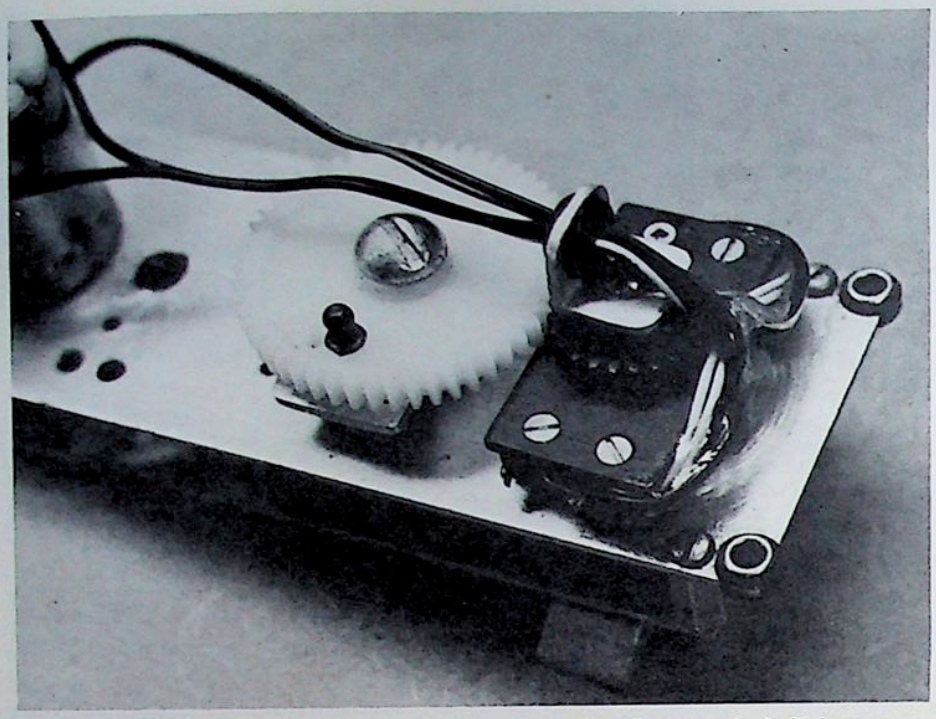
Once the switch-plate is done, attach the two microswitches to the underside with glue or screws. If screws are used, the heads must be countersunk so they won't interfere with the plate's rotation. I suggest that you buy two new microswitches (Radio Shack #275-016) to keep from ruining the old ones just in case you



Bottom view showing mounted large gear and trial fitting of switch-plate.



End view showing mounted and wired switch-plate with "L" bracket with wires protected by rubber grommet.



Bottom view showing wired switch-plate with "L" bracket and small gear meshed with large gear.

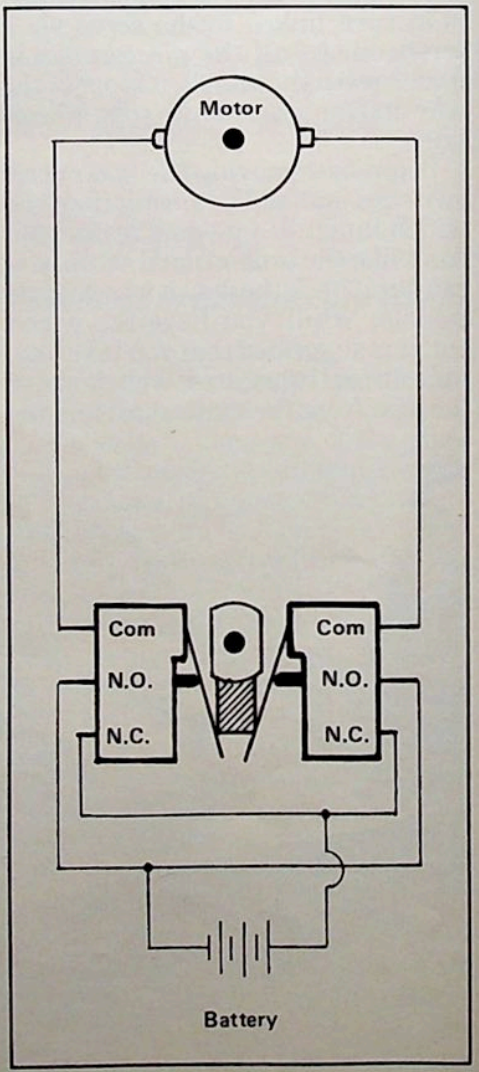
want to put the winch back like it was. Position the plate over the 4-40 tapped hole in the main shaft and attach with a 4-40 machine screw so that the plate can rotate freely but doesn't wobble. If the hole in the plate is too big, you'll need a bushing of some sort to fit the screw.

Next make the large gear mounting plate from thin aluminum or plastic and drill four 3/32-inch holes to fit the holes already in the winch bottom plate where the old microswitches were mounted. Mount the large gear plate with 2-56 machine screws on short standoffs, to position it so that the two gears will mesh properly. Hold the two gears in alignment and carefully drill the mounting hole for the large gear. Secure the large gear with a machine screw and a bushing if needed . . . it must also rotate freely without wobbles. A ball link (Du-Bro #181) for the pushrod is threaded into the large gear.

At this point, loosen everything a bit and make sure that the two gears mesh and the plate rotates smoothly without hitting anything (notice the notch in the large gear mounting plate to keep the switches from hitting). Wire up the microswitches as shown on the diagram. The two "Normally Closed" poles are connected together and to the negative side of the battery pack, the two "Normally Open" poles go together and to the positive side of the battery, and the "Common" poles go to the motor terminals. Use flexible wire to avoid eventual strand breakage due to repeated flexing and put some epoxy along the edge of the two switches to keep the wires in place. Replace the cam and switch-plate and lead the wires away from the gears and back up through a grommet in an "L"-shaped bracket that is attached to the top of the switch-plate. The wires then go to the motor and battery pack. If the winch runs opposite to the way the switch-plate is moved, reverse the two motor wires. NOTE: Be sure that when the switch-plate is centered in relation to the cam arm, both switch arms touch the cam but neither of the switch arms is depressed enough to close a switch. This pretty well completes everything except making the pushrod and linking the servo to the large gear, though it wouldn't hurt to go back and put a little Loctite on all the screw threads. A fuse in the line to the battery pack might also be a good idea just in case the winch ever jams and stalls the motor. You may have to play around with the position of the ball link and/or servo arm length to get the desired winch rotation..about 150-160 degrees is usually enough. Note the "servo-saver" (Du-Bro #120) on the output arm . . . the servo moves faster than the winch does and the springs reduce the load on the servo until the winch catches up. A linear output servo might be better than the usual rotary type, though it hasn't been tried. *Check into the clever linear output adaptors for rotary type servos introduced by Model Products Corp., Allamuchy, N.J. They're great! wcn)*

When the winch conversion is finished, connect up the radio and battery pack and try it on the bench. It won't be as smooth as an electronic proportional unit, but it isn't far behind. The arm will move in discrete steps rather than smoothly, but it isn't all that noticeable on the water and you don't have the constant battery pack drain characteristic of some electronic winches.

A final suggestion or two on the Dumas winch (or any sail winch, for that matter; try mounting the winch using grommets like you would a regular servo. It keeps quite a bit of the winch noise from resonating inside the hull and makes for a quieter boat. Also, consider replacing the regular Dumas winch motor with a stronger one. A Mabuchi 380 is only a little longer and fits the same mounting holes as the old motor but has at least twice the power and speed. This is the "Grasshopper" R/C offroad buggy motor that is often replaced with a larger one. It is also sold separately by some of the mail-order hobby dealers for $10-15. The winch becomes much faster and more responsive . . . it runs with real authority. The battery drain is higher but the "on" time is less, so the total drain isn't increased much at all. Try it and see . . . I think you'll like the change as well as the proportional operation of your winch. •



Winch wiring diagram—bottom view.

Typical action as Rick Schultz's "Andrea Doria" is surrounded by HMS Valiant, HMS Warspite, and USS Alabama. Bilge pumps on A/D and Valiant are pumping frantically to keep boats from sinking.

R/C WARSHIP COMBAT CHAMPIONSHIPS

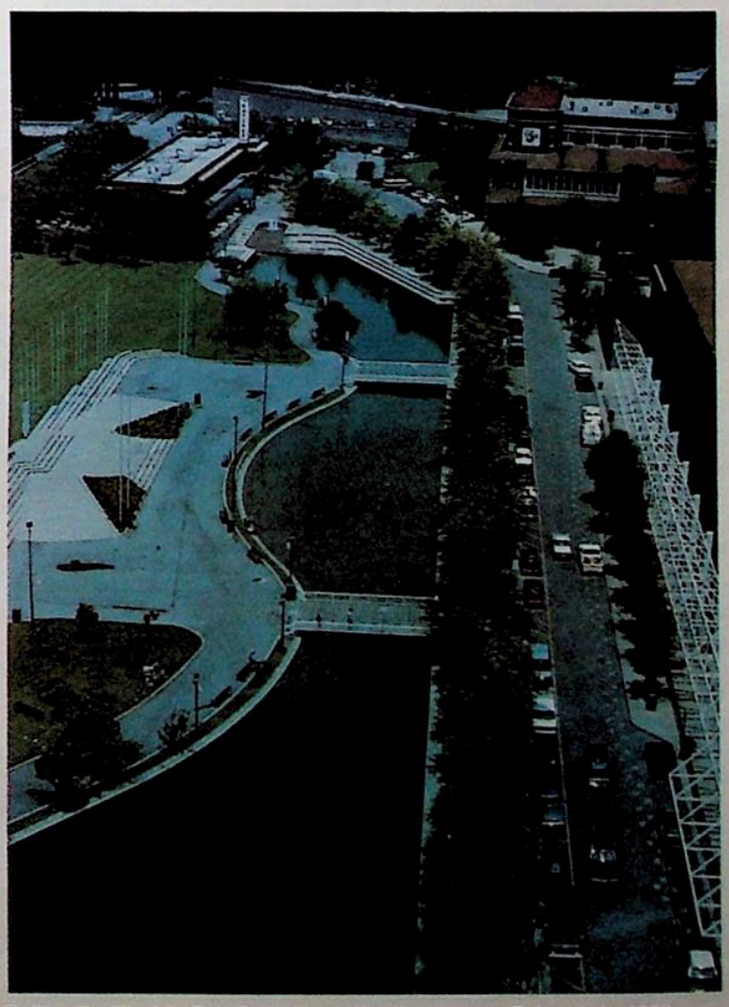
By TOM JASS . . . Racing is not the only exciting live action possible with R/C model boats. Actual combat with salvageable model warships is a rapidly growing facet, calling for strategy and maneuverability.

Imagine a World War II naval battle involving these fleets: American and British warships against Japanese, German, Italian and French warships. Which fleet would have triumphed? This question was answered by members of the International R/C Model Warship Combat Club at their 1989 championship. During the week of July 9-14, twenty-two captains (from ten states) traveled to Knoxville, Tennessee; the issue of club bragging rights for 1989 was settled by a series of fleet and campaign battles.

The championship was held at the site of the 1982 Knoxville World Fair. The battles occurred in a series of three connected ponds, each approximately 150 to 200 feet long and 60 to 80 feet wide. The ponds were joined by two channels where the water narrowed in width to 40 feet; wooden bridges which the ship models could sail under crossed these channels. The water was about two feet deep in the battling areas. The ponds were small; their configuration played an important role in the battling tactics that emerged during the week.

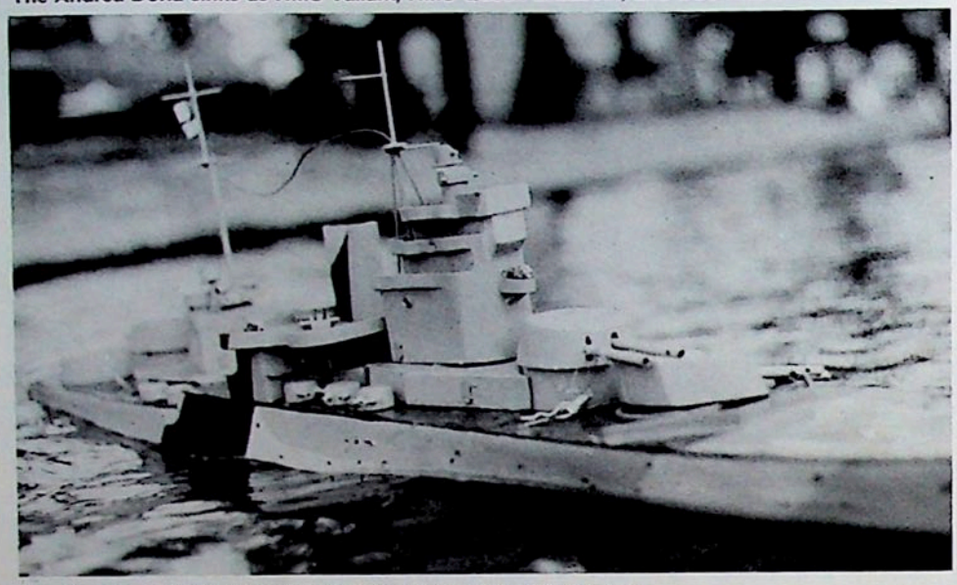
SHIP CONSTRUCTION AND BATTLING

An explanation of the club's construction and battling rules will be helpful to set the stage. Combat ship models are built to 1/144 scale (1″=12′); a typical battleship (BB) or battlecruiser (BC) model is 55″ to 75″ in length; heavy cruiser (CH) and light cruiser (CL) models are 40″ to 50″ long. The ship models are divided into eight separate classes; these classes represent the full-sized ship's relative offensive/defensive power. For example, a modern



Battle site. World's Fair Park, Knoxville, Tennessee. Fair was in 1982.

The Andrea Doria sinks as HMS Valiant, HMS Queen Elizabeth, and USS Alabama stand by.



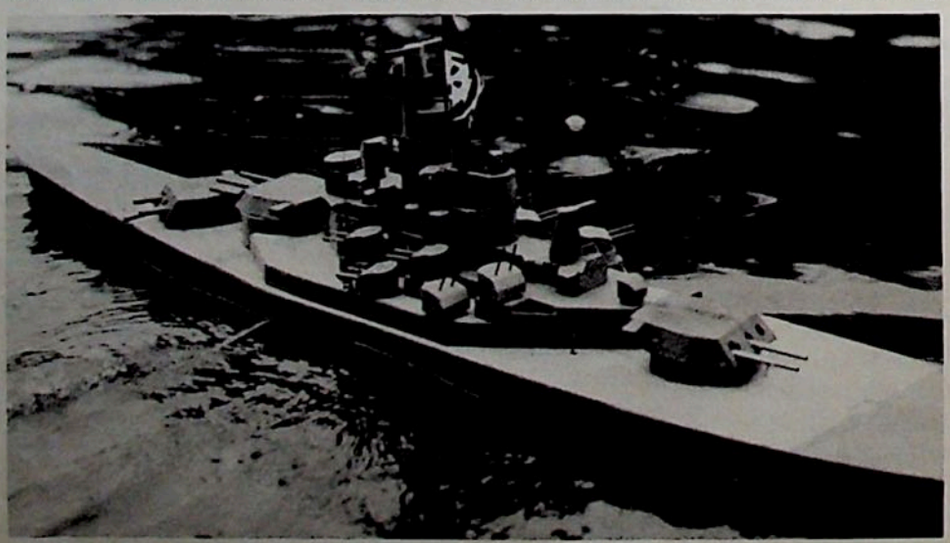
Dan Hamilton's HMS Valiant. Note water stream from bilge pump.

(post-1935) BB is allowed 6 battling "units." A World War II (WWII) light cruiser is allowed only two "units." A unit is either a freon powered bb gun and magazine with 50 bb's, or an electric pump. The bb's which the guns fire are used to penetrate an opponent's hull. Pumps are built to dewater damaged hulls; they have a capacity of about 1-1/2 gallons per minute. Only capital ships (BBs and BCs) may mount broadside guns; one 90 degree ship quadrant must remain unprotected by guns. All of the ship's hulls are skinned with 1/32-inch balsa so the bb's penetrate easily. The ship's radio equipment is housed in a watertight box. The speed of the models is relative to the speed of the full-sized ships. Models of ships which were 30 knots or faster are limited to a speed of 24 seconds over a 100-foot course. Twenty-six seconds per 100 feet is the model speed for ships whose full-sized counterparts made 25-30 knots. Battles are divided into two sorties which usually last for 20 to 30 minutes each. When a warship has depleted its bb's or wishes to cease battling, her captain must declare "five minutes"; his ship must then remain on the water (without firing) for an additional five minutes. Between sorties, freon tanks and bb's may be reloaded, but holes may not be patched nor may batteries be changed. Sink points are awarded to the opponent when a ship sinks; the higher the ship's Class, the greater the sink points. Hull holes count 10 points above the waterline, 25 points on the waterline, and 50 points below the waterline. Penalty points are charged to a captain who rams another ship if damage is caused . . . friend or foe alike. The damage points that a fleet scores against an enemy are divided between the fleet members using ratios that correspond to the ship classes. This technique generally distributes the points correctly, as the capital ships usually cause the major damage.

Fleet battles usually resemble World War I airplane dogfights because the ships battle each other individually or in small groupings; three or four mini-battles occur within the context of the overall fleet battle. When 20 ships in two fleets are on the water battling, the gunfire sounds like popcorn popping. Fleet tactics are extremely general in nature; it is difficult (if not impossible) to coordinate the movements of more than two or three ships in a fleet at a time. Fleet battles are a swirling melee . . . ships shooting and being shot all over the surface of the pond.

ALLIED CAPITAL SHIPS

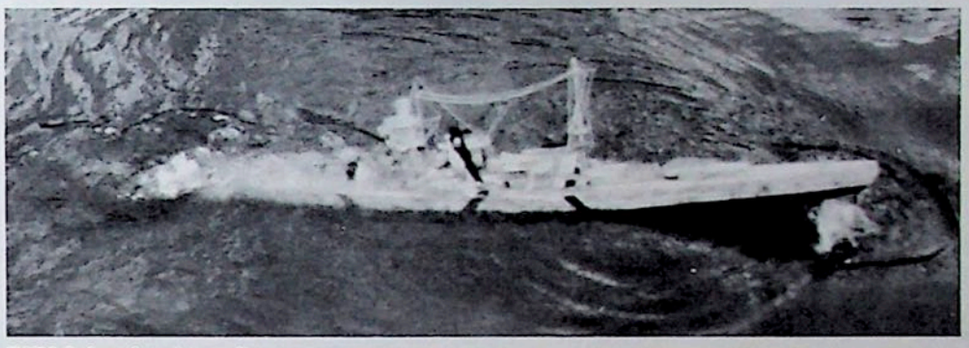
At the Knoxville championships the fleets were divided as they were in WWII; the Allies (America and Great Britain) against the Axis (Germans, Japanese, Italians, and French). The Allied fleet was led by a powerful array of capital ships. Four SOUTH DAKOTA class BBs were present and ready for action. With their twin rudders, this class of BBs was especially suited for close-in combat. Their 26-second speed made them unable to overtake most of the Axis ships, however. USS MASSACHUSETTS and USS ALABAMA were captained by James Foster and Steve Milholland from Springfield, Missouri. These ships were built from the same plan set and were identically armed with two bow guns, two stern guns, one broadside gun, and a single pump. This configuration left no doubt that the captains were offensively minded and aggressive. James and Steve have both been high point winners at previous club championships. Will Montgomery, from Glen Burnie, Maryland, returned with the veteran USS SOUTH DAKOTA that he used to win the 1988 championship in



James Foster's USS Massachusetts, overall champion. Note that even the winners keep the water pumps working!

Amarillo, Texas. She was armed with three stern guns, one bow gun, a broadside gun, and a single pump. Will pioneered the use of multiple stern guns on Allied BBs. The fourth SOUTH DAKOTA class BB was Carl Shafer's rookie ship, USS INDIANA, from Grandview, Missouri. Carl had armed her with three stern guns and two broadside guns. New capital ships usually require a teething period to become truly effective; would the Axis fleet permit USS INDIANA the luxury of a few shakedown cruises? Carl also brought his HMS YORK (an EXETER class heavy cruiser) as a backup ship. Three British BBs of the QUEEN ELIZABETH class reinforced the Allied fleet. The ELIZABETHs are also 26-second ships with dual rudders; they usually favor "alongside" battle tactics. The name ship in the class was built and fought by Bob Amend, of York, Pennsylvania. His HMS QUEEN ELIZABETH was a five-unit ship with two pumps, two broadside guns, a bow gun and stern gun (only three guns were loaded when two pumps are used). She was a definite contender for a Best of Scale award. Her sister ship, the HMS VALIANT was similarly armed. She was captained by our 1988-89 club president, Dan Hamilton, from Decatur, Alabama. Marty Hayes, from Annapolis, Maryland, had built his second HMS WARSPITE model; she rounded out the class. She was armed with two stern guns, one bow gun and a broadside gun, in addition to two pumps. She generally used her stern guns and a bow gun in battle. Tom Jass' HMS TIGER (Lombard, Illinois), was a 24-second, four-unit WWI battlecruiser. She was expressly built to give the Allied fleet a fast 30-knot capital ship.

D.W. Fluegel's DKM Scharnhorst . . . before.



DKM Scharnhorst . . . after.

She was armed with a pump, a bow gun, and two broadside guns. Dan Schultz, from Glen Burnie, Maryland, captained the other Allied BC, HMS INFLEXIBLE. She was also a four-unit ship. Dan armed her with two stern guns, a bow gun, and a pump. With her slower speed (26 seconds) and lack of broadside guns, she was less likely than HMS TIGER to mix it up at short range.

ALLIED CRUISERS

Heavy cruisers are three unit ships. Broadside guns are not allowed, so they are usually armed with a bow gun, a stern gun, and a pump. Light cruisers are permitted two units, generally one pump and a single gun. The three Allied cruisers were models of 30-knot ships so their speed was 24 seconds per 100 feet. USS OKLAHOMA CITY was a three-unit CH captained by Stan Watkins, our host, from Knoxville, Tennessee. She was constructed with plastic ribs and framing, decking, and superstructure. Stan has led the way in our club with this plastic construction technology. Leif Goodson, a rookie from Lakeland, Florida, brought his USS HOUSTON, a treaty-class CH armed with a bow and a stern gun and a

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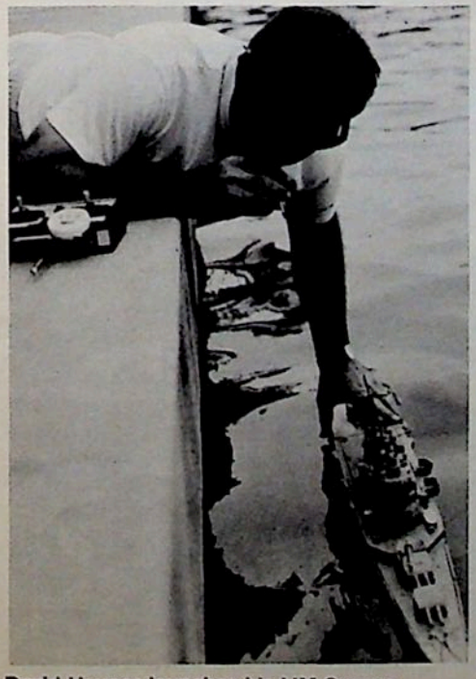
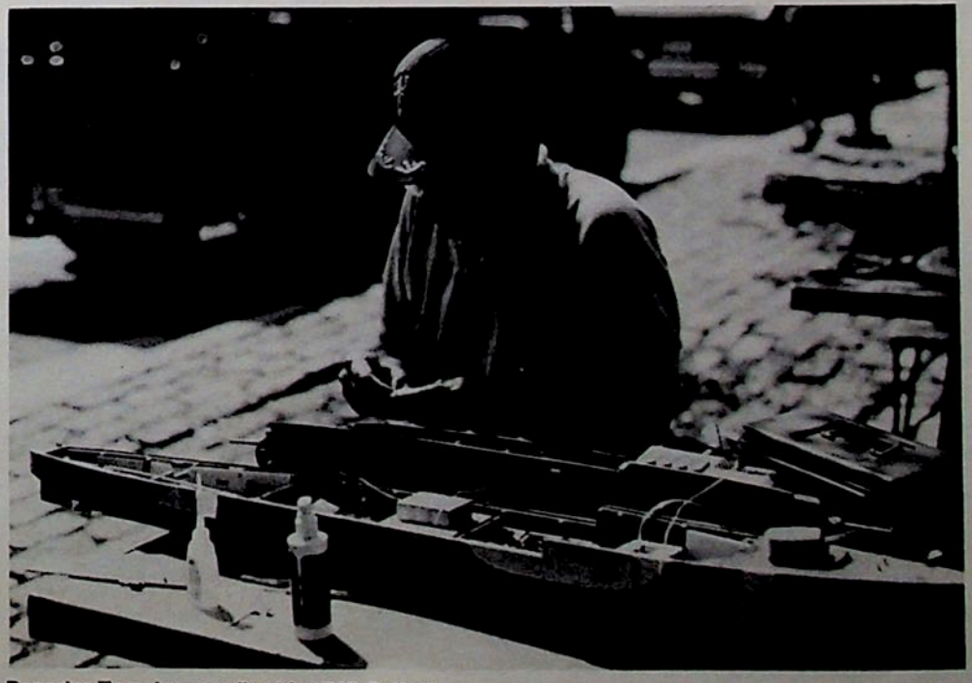


David Haynes launches his IJM Suzuya.



Reporter Tom Jass readies his HMS Belfast.

Over 100 models registered at the Mid-Atlantic Regionals. All Mid-Atlantic photos by Carl Neary.

"Miss Chris" by Jim Lewis, Birmingham, Alabama. Great finish and detail add much to the realism of this classic, timeless beauty, seen at Midwest Regionals. Photo by Mark Junker.

SSMA 1989 Midwest and Mid-Atlantic REGIONALS

Regatta reports by JOHN LOUK and CARL NEARY

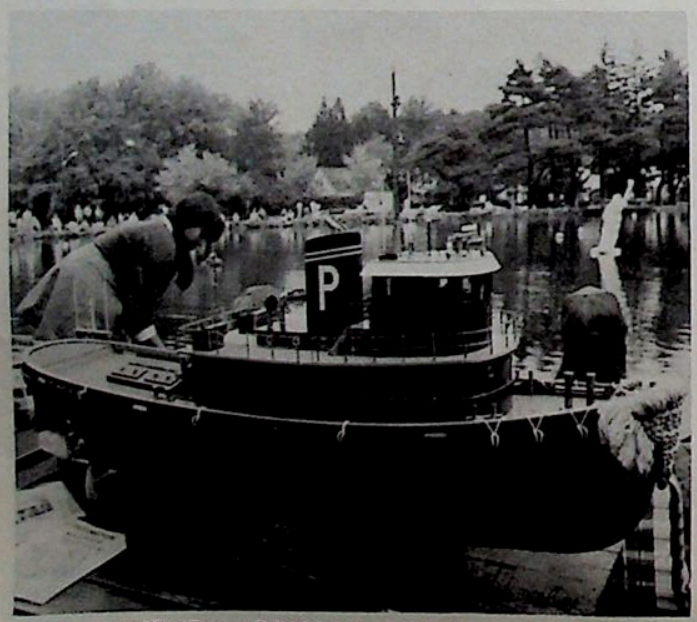
By JOHN LOUK

The SCALE SHIP MODELERS ASSOCIATIONS' (SSMA) MIDWEST REGION conducted its second annual Midwest Regionals on September 16-17, hosted again by the *ADMIRALS* scale model boat club of Indianapolis. This year's Regionals opened to a thorough drenching as the Indiana skies opened up, overwhelming the 50% chance of rain forecast a few hours earlier. The rain provided additional time to renew friendships and "talk shop" under the cover of the main tent as we waited out the storm.

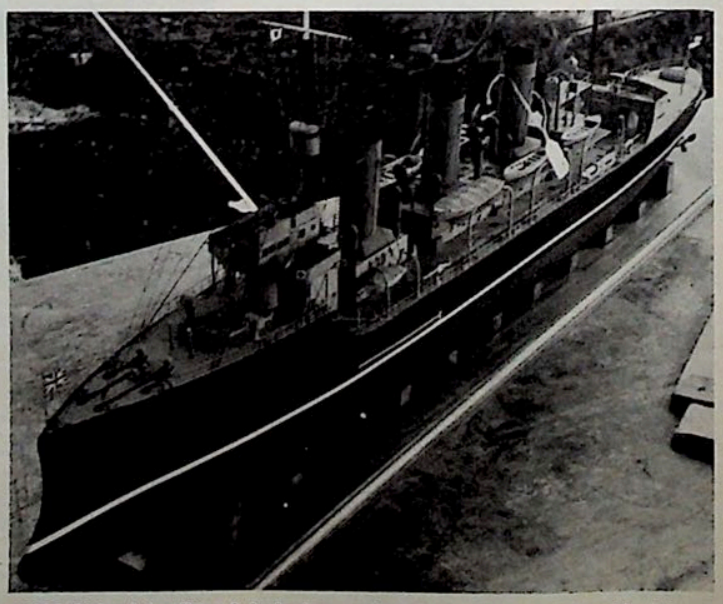
By early afternoon the rain stopped and the participants, from as far away as California, began the competition in earnest. Sixty-nine entries competed in precision steering, conning, precision/predicted log, and scale judging. There were few ties to run off even though the competition was fierce. The number of Junior Division (below 16 years in age) entries increased this year, a positive sign that the younger generation is active and growing in our hobby.

Another very encouraging and welcome sight was the variety of unique and unusual craft being modeled to the highest standards of craftsmanship. From Bob Cline Sr.'s *TRUMP PRINCESS,* a model of Donald Trump's luxury yacht; Tug Wilson's Great Lakes fishing boat *PAIGE W;* to Dave Richey's "Modelers Choice" *HMS SKIRMISHER,* the entries clearly demonstrated that today's model shipcrafters are looking in new directions for craft to model.

The manufacturing community was well represented with displays by *WARSHIP HULLS UNLIMITED, SUPER SHIPS AND JOHN'S HOBBIES, HARTMAN R/C FIBERGLASS,* and *ROBLES CUSTOM MODELS.* The generous



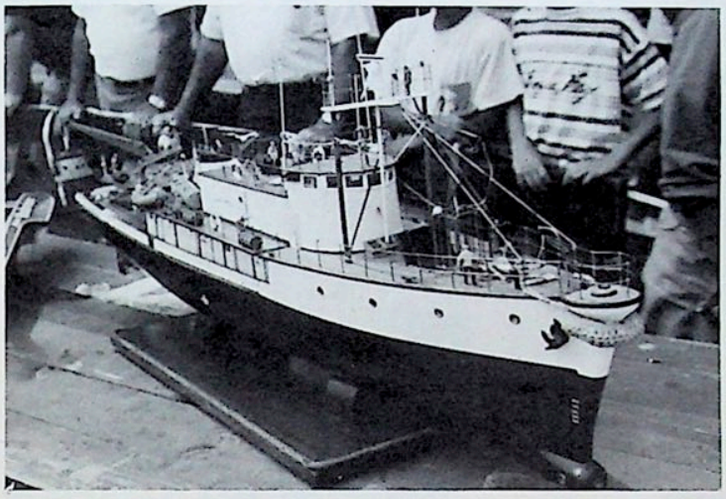
Lou Lemongelli's "Peggy O," 53-inch tug. Won Dynamic Models' Choice Award. All brass fittings scratch built. Mid-Atlantic.



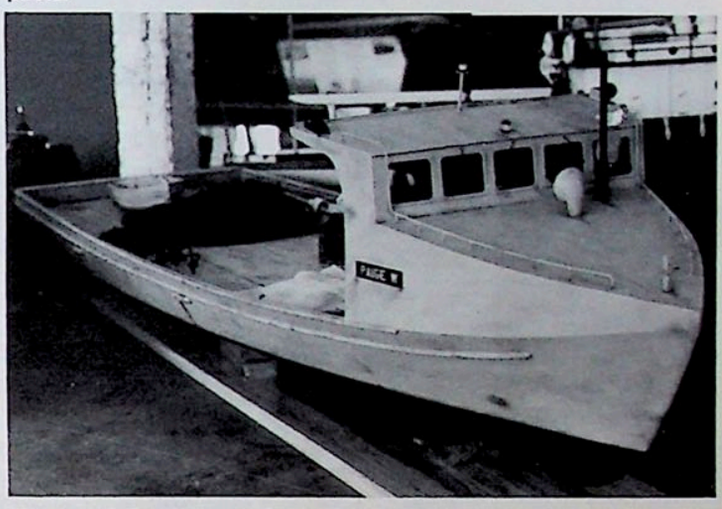
"HMS Skirmisher" by Admirals member Dave Richey. Won Modelers Choice and Best Military awards. Based on Deans kit with lots of scratch building added. Midwest. Photo by John Louk.

Midwest winners (l to r): Dave Richey, Modeler's Choice and Best Military; Paul Doman, Precision Steering, under 30 inches; Leonardo DeSalvo, Conning, under 30 inches; Lee Upshaw, Precision Steering; Bob Cline, Jr., Conning, over 30 inches and Overall High Points. Kerry Addington photo.

Junior division Midwest winners (l to r): Kelli Hunter, Battle Creek, MI, Precision/Predicted Log; Matt Clopp, Chicago, Precision Steering; Tavis Hampton, Indianapolis, Conning and Overall High Points. John Pollman photo.



Louis Scaduto's 1/4-inch scale "Calypso." Heli lifts and lands on deck. Built on Dynamic Models hull. Mid-Atlantic.



"Paige W," Tug Wilson's Best of Class-Workboat. Scratch-built Great Lakes fishing boat. Photo by Mark Junker.

support and donations from manufacturers, distributors, and hobby shops played a major role in enabling the *ADMIRALS* to present a quality event.

Back by popular demand and now a regular Regionals feature, the *ADMIRALS* night run and steak cookout was a welcome change of pace on Saturday night following the day's intense competition.

On Sunday, clear skies followed a brief morning fog which lifted before competition resumed. Spectators turned out in great numbers to enjoy the weather, witness the running events, examine the models on display, and perhaps become inspired to get involved in this great hobby.

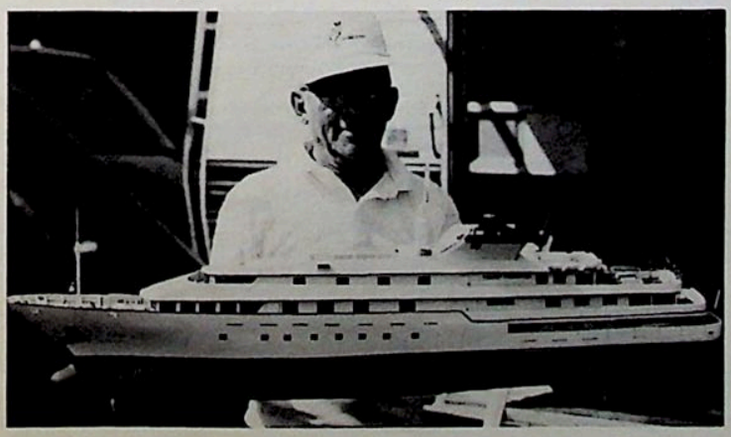
ADMIRALS Commander Don Becker truly distinguished himself; functioning as host, competition co-director, and chief cook at the evening cookout, he also managed to win the Overall High Points Award in his spare time and achieved the only perfect score in any of the underway events during the Regionals!

The 1989 SSMA Midwest Regionals were an outstanding success and great achievement by any standard. I invite all to reserve the third weekend in September 1990 to attend the 1990 SSMA Midwest Regionals or the SSMA Regionals event in your region. You won't regret it! John Louk, Midwest Director, SSMA, 62 Hawthorne Court, Carmel, IN 46032.

1989 SSMA MIDWEST REGIONALS RESULTS

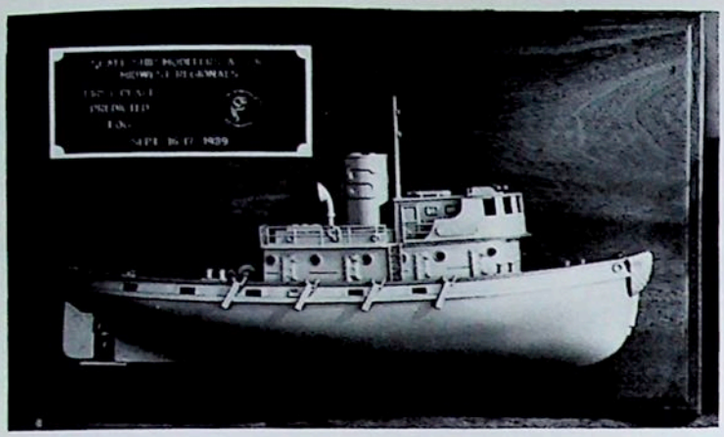
PRECISION STEERING
(Over 30" - Seniors)

1. Don Becker, Indianapolis
2. John Louk, Indianapolis
3. Jim Jackson, Rochester, MI

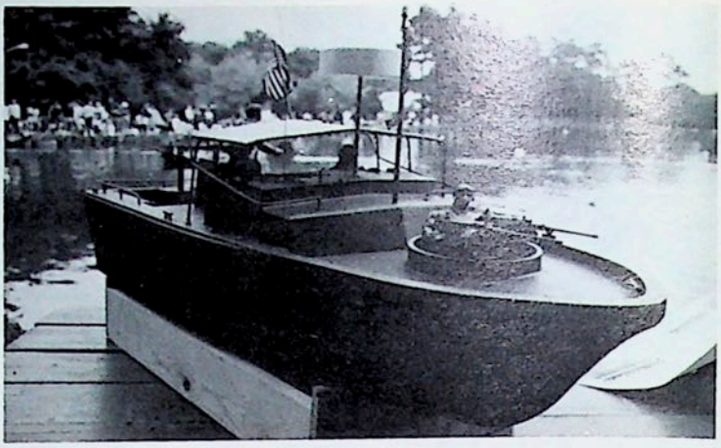


Bob Cline, Sr., Huntington, Indiana with his "Trump Princess." Scratch-built after visit aboard prototype! Photo by John Pollman.

Admirals Commander Don Becker (right) receives High Points award from SSMA National Director Dave Hampton. Kerry Addington photo.



First Place plaque for Predicted Log. Lindberg kit built by Admirals member, then cut in half, painted and mounted. John Louk photo.



Glen Van Cott's PBR in olive drab finish. Mid-Atlantic.

James Pond, site of Midwest Regionals, very full after month-long "monsoon." Photo by Kerry Addington.

4. Kevin Evernham, Indianapolis
5. Paul Doman, Chicago

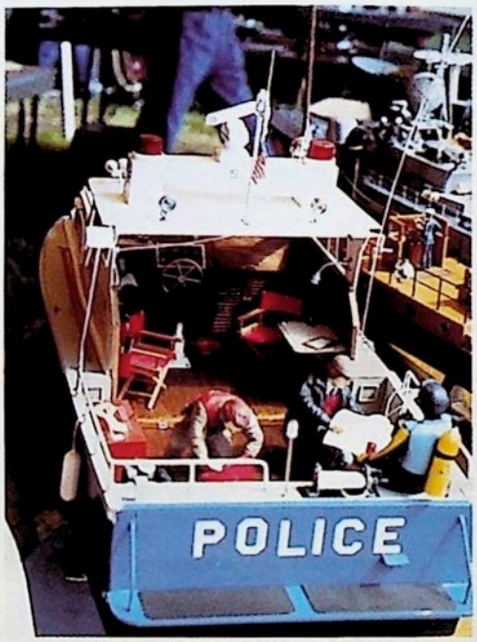
PRECISION STEERING (Under 30" - Seniors)
1. Paul Doman, Chicago
2. Bob Cline, Jr., Hungtington, IN
3. Leonard DeSalvo, Chicago
4. Don Becker, Indianapolis
5. Dave Richey, Indianapolis

CONNING (Over 30" - Seniors)
1. Bob Cline, Jr., Hungtington, IN
2. Don Becker, Indianapolis
3. Kevin Evernham, Indianapolis
4. Bob Cline, Sr., Hungtington, IN
5. Jim Jackson, Rochester, MI

CONNING (Under 30" - Seniors)
1. Leonardo DeSalvo, Chicago
2. Paul Doman, Chicago
3. Don Becker, Indianapolis
4. Bob Cline, Jr., Huntington, IN
5. Mike Chester, Ft. Wayne, IN

PRECISION/PREDICTED LOG (Seniors)
1. Lee Upshaw, Long Beach, CA
2. Bob Cline, Sr., Huntington, IN
3. Bob Booth, Indianapolis
4. Jim Lewis, Birmingham, AL
5. Kevin Evernham, Indianapolis

PRECISION STEERING (Juniors)
1. Matt Klopp, Chicago



"St. Charles Police Boat" by Dave Hampton, SSMA National Director. Incredible attention to detail is his trademark. Photo by Mark Junker.

2. Tavis Hampton, Indianapolis
3. Julie Jackson, Rochester, MI

CONNING (Juniors)
1. Tavis Hampton, Indianapolis
2. Julie Jackson, Rochester, MI
3. Kelli Hunter, Battle Creek, MI

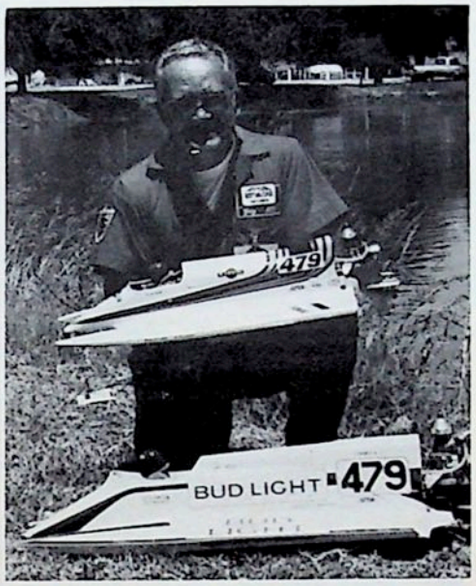
PRECISION/PREDICTED LOG (Juniors)
1. Kelli Hunter, Battle Creek, MI

Van Cott's PBR begins its mission. Mid-Atlantic.

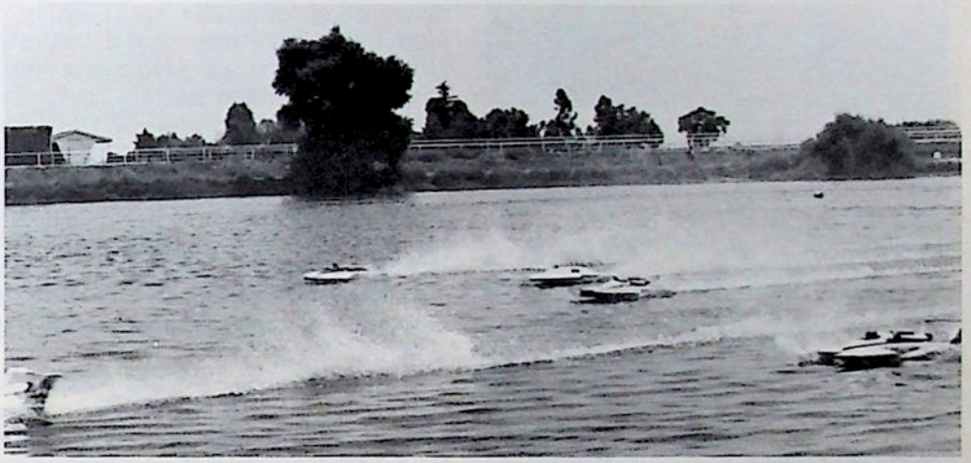
First Place Swift Boat ran well for Les Greenspan at Mid-Atlantic.

Roger Storey, ex-full size tunnel driver, calls for daughter Sheri in Kids' Competition. They're from Riverside, CA. He raced in 7.5cc OPC and 7.5cc Modified Tunnel. Pam Stewart photo

Six top qualifiers for 11cc Scale Unlimited finals (l to r): Paul Dunlap, 'Executone'; Larry Johnson, 'Renault'; Dave Shirley, 'Kinney Toyota'; Jim Auguston, 'Boat'; Bill Peck, 'Pringles'; and Paul Kitano, 'Pay N' Pak.' Pam Stewart photo.



Jay Selby, Redwood, CA, Dist. 9 Outboard Director and long-time outboard tunnel enthusiast.



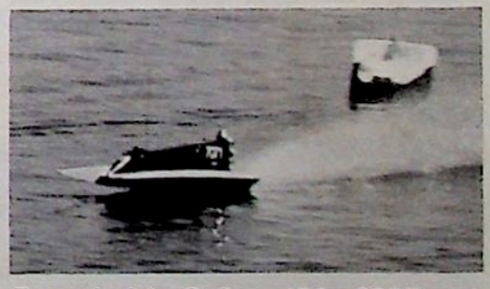
Start of final of 11cc Scale Unlimited had Bill Peck jumping start, then Paul Dunlap, Jim Auguston, Larry Johnson, and Dave Shirley hitting line together. Pam Stewart photo.

ning trophies in four classes and capturing the Junior High Point award. I even managed to win a trophy in 3.5 OPC Tunnel with a brand new boat. The most satisfying aspect of the whole Riverland Nats was watching Paul's progress as he raced everything from 3.5cc OPC Tunnel to Scale Hydro. Paul has been racing model boats for eleven of his seventeen years, so I suppose it shouldn't come as any surprise to me when he does well at a national championship.

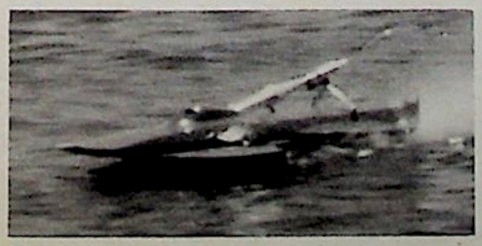
From Dunlap's Observations and Opinions of the Riverland Nats, the following items caught my attention. Interest in Offshore Enduro Racing is definitely waning. In my opinion, this facet of model boat competition doesn't deserve two days billing on a national championship schedule. I've been saying this for the past two years and at the 1990 APBA R/C Model Nationals, things will be different. I can make this statement as I'm the Event Director for the 1990 national event! More on that later in this article.

The 3.5cc outboard hydroplanes no longer need a separate class all their own. The 3.5cc outboard hydroplanes are now more than capable of holding their own against 3.5cc inboard hydroplanes. In fact, 3.5cc outboard hydroplanes placed first, second, third, and fifth in the 3.5cc Hydroplane Class. However, it might be the opinion of those who compete in the 3.5cc Hydroplane Class with inboard engines that the 3.5cc outboards be restricted to the outboard class, as the inboarders cannot double enter their boats.

Jack Oxley's Octura Wing Ding grabbed National Championship in 11cc Hydroplane.

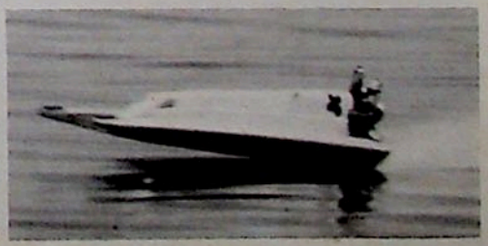


Tommy Lee's LeeCraft swept 7.5cc OPC Tunnel, 11cc OPC Tunnel, and 7.5cc Modified Tunnel.

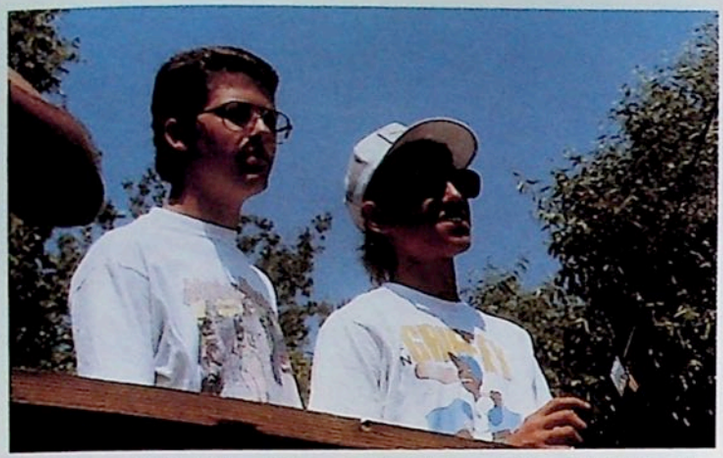


Ron Heidigh, Sparks, NV, drove Octura Wing Ding to 7.5cc Hydroplane Championship.

Bill Peck, Concord, CA took National Championship in 30cc Monoplane Class.

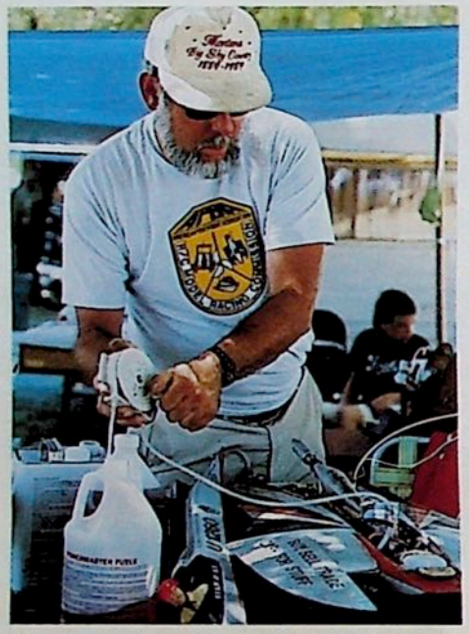


Judy Hazelwood's LeeCraft took Second Place in 11cc OPC Tunnel.



David Dyson (left), National Champion for third year in Sport 40 Division II, calling for Paul Dunlap, Junior High Point winner.

Model boating's answer to Chinese Firedrill, the Team Marathon: Ron Neidigh with transmitter, Bill Dyson (left) and Jim Wilson exchange flag baton.

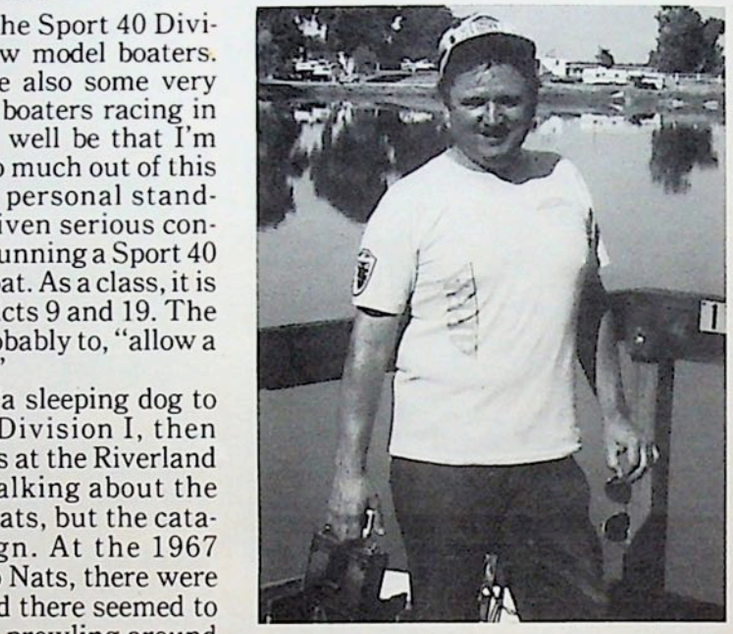


Montana's Alan Hobbs (not Grizzly Adams) refuels his Steve Muck Spartan Sport 40. Alan, Great Falls, MT, is APBA's Offshore Chmn. Pam Stewart photo.

Although a couple of top competitors in the Sport 40 Division I class explained how easy it is to put together an engine for this supposedly "entry level" hydroplane class, I still have some reservations. It seems to me the class has strayed from it's original intent of providing an inexpensive hydroplane class for novice model boat racers. I realize many of those involved in the Sport 40 Division I class are new model boaters. However, there are also some very experienced model boaters racing in this class. It could well be that I'm making entirely too much out of this situation. From a personal standpoint, I've never given serious consideration to even running a Sport 40 Division I type of boat. As a class, it is only raced in Districts 9 and 19. The best approach is probably to, "allow a sleeping dog to lie."

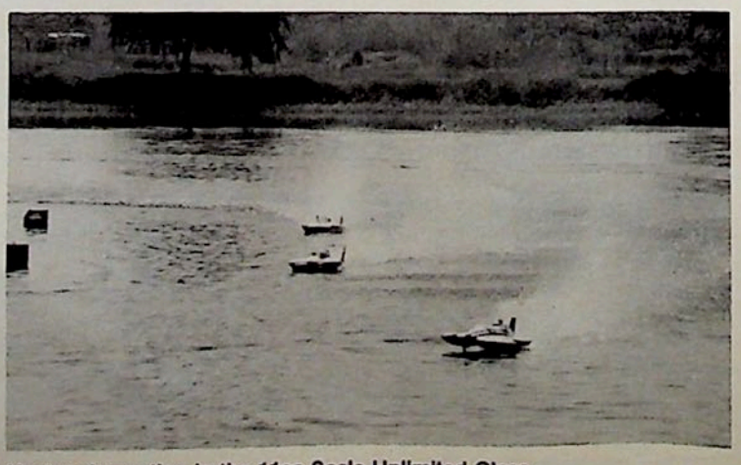
If I'm allowing "a sleeping dog to lie," in Sport 40 Division I, then where were the cats at the Riverland Nats? We're not talking about the furry, feline type cats, but the catamaran hull design. At the 1967 NAMBA San Diego Nats, there were lots of cat hulls and there seemed to be quite a few cats prowling around the 1988 APBA Wichita Nats. However, I doubt that I saw more than three or four cat hulls at the Riverland Nats. It could be the pendulum is swinging back to the outrigger type hull in the competition hydroplane classes. There would have been no advantage to having a catamaran at the Riverland Nats because the ample turns and smooth water conditions favored hydroplane designs.

Winning a National Championship and APBA U.S. #1 is a combination of speed, skill, and racing luck. On more than one occasion, bad luck in the form of either a radio problem, equipment breakdown, or racing mishap snatched a National Championship from someone who seemed to have it "nailed down" by just finishing their last race. That old adage, "To finish first, you must first finish," is never more applicable than at a National Championship Regatta.



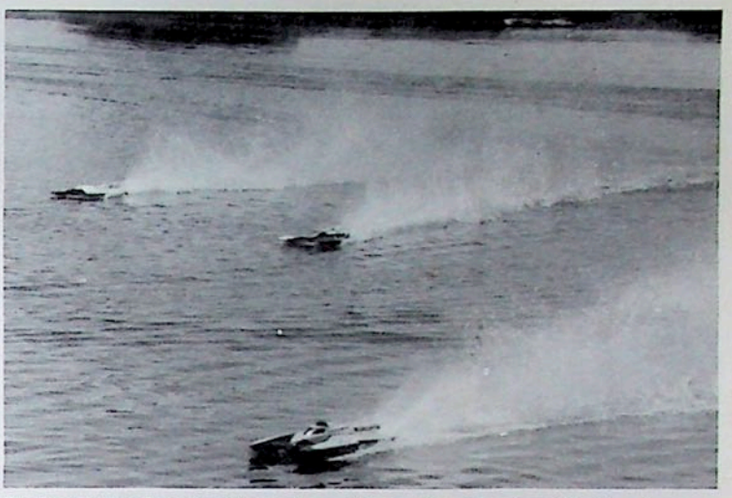
Ken Reilly, San Francisco, won National Championship in 3.5cc OB Hydroplane and 7.5cc Monoplane.

Racing fleet of *USB&SM* contributing editor Jerry Dunlap and Dave Frank. Very colorful! Photo by Pam Stewart.

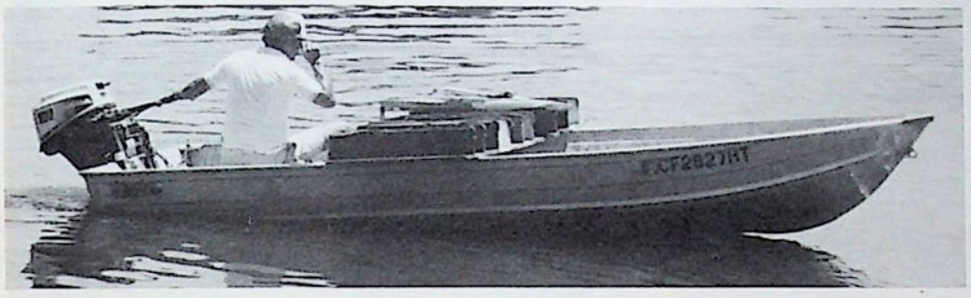


Heat racing action in the 11cc Scale Unlimited Class.

Dave Shirley, Nat'l Champion in 3.5cc Offshore, starts son Steve's Muck 3.5cc Streaker. Steve won Kid's Competition. They're from Citrus Heights, CA.



Racing action in 7.5cc Hydroplane Class at the Riverland Nationals.



Ray Freeman, Race Site Coordinator, spent lots of time clearing the course of "dead" boats. Ray's from Madera, CA.

The 1989 APBA R/C Model National Championship Regatta is now in the books and it's time to start thinking about the 1990 Nationals. And as I'm the Director, I'll be doing plenty of thinking about this event. The race will be conducted in Olympia, Washington from July 28 through August 3. There will be a change in the usual Nationals format with the first two days of racing featuring classes like 3.5cc and 7.5cc Tunnel, Sport 40, 7.5cc Hydroplane and 7.5cc Hydroplane. The Awards' Banquet will be held Thursday evening and the racing will conclude on a Friday, allowing participants to attend the Third Annual Kingdome Mint Gold Cup in Seattle.

The final results of the 1989 APBA Riverland Nats were:

3.5cc Offshore
1. Dave Shirley
2. Paul Dassonville
3. Robert Paravicini
4. Jim Williamson
5. Joe Hendrickson

7.5cc Offshore
1. Rod Snoddy
2. Dennis Preszler
3. Les Pardue
4. Mark Anderson
5. Dick Norris

11cc Offshore
1. Paul Dassonville
2. Kay Preszler
3. Bill Peck
4. Jerry Wright
5. Jim Williamson

Richard Hazelwood calls for wife, Judy, Women's High Point winner. Tommy Lee in background. Hazelwoods from Needles, CA, Tommy from Culman, AL.

30cc Offshore
1. Paul Dassonville
2. Roger Hooks
3. Rod Snoddy
4. Dennis Preszler
5. Dick Roberts

3.5cc OPC Tunnel
1. Todd Wagner

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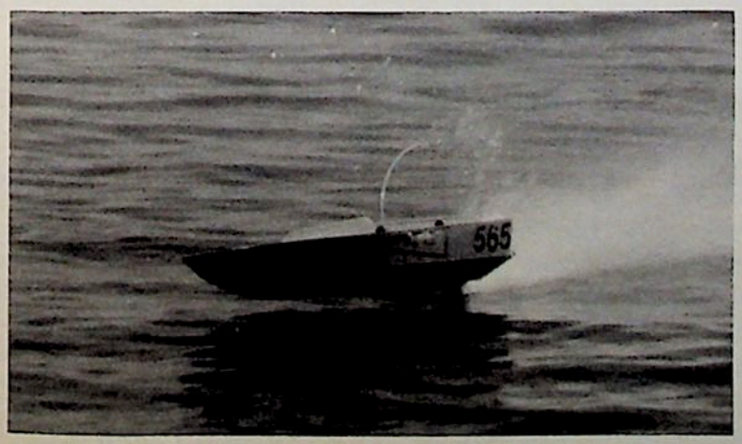
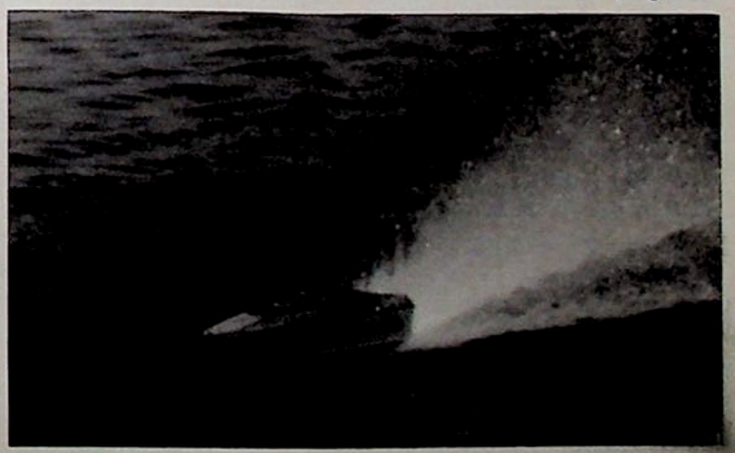


Jim Wilson's 11cc Mono placed Third; had fastest time, won three heats, but a DNF in one heat proved costly.



Paul Dassonville's deep vee was first in 30cc Offshore, 30cc Mono, and second in 11cc Mono.

One of a fleet of four 48-inch L.O.A. models of the San Juan 24, built by AMYA's first president, and former banana republic dictator, Rich Matt.

STRICTLY SAIL

By ROD CARR

Over the past 20 years I have had direct contact with almost every model yacht club in the country that is part of AMYA. Out of that experience a number of trends keep repeating themselves. I'm sure that model yacht clubs are textbook examples of just about any kind of volunteer organization. From that perspective, there are probably college courses on group psychology that would take a semester to describe the form, structure and dynamics of the "club." I believe we are interested in understanding how model yacht clubs operate so that we can maximize the enjoyment we gain from our sport while minimizing the amount of work that it takes to keep the activity healthy. The following discussion is a liberal mix of personal observation and prescription.

Most clubs have their genesis in the enthusiasm of two or three folks who are the shared holders of entrepreneurial spirit. They typically have selected a class of boat and found a place to sail before they discover the AMYA and its support for model yachting across the country. With three charter members required for an AMYA club, and no fees, it doesn't take much to have a new club born. The midwives often don't realize that the birth is the easy part; raising the infant and teaching it to stand on its own two feet, feed itself, and become a stable citizen are much more difficult steps. Indeed, the decline and death of a model yacht club can occur in less than a year, and I've seen it happen more than once.

Early planning needs to be done, and done so early that most people will think it is unnecessary. Take my word for it, plan first . . . recruit new members second. A key decision is to start right from the outset with a division of responsibility for the various support roles that the club demands. The following list is the present structure of the Gig Harbor Model Yacht Club. Notice that each job can be done by one person, but no job is so onerous that it replaces sailing as the main activity for the job holder. A total of seven individuals carry out the work of the ten jobs.

Executive Board

COMMODORE: Newsletter Editor, AMYA Contact, NORC Contact

VICE-COMMODORE: Race Program, Commodore-Elect

TREASURER: Budget, Membership, Bookkeeper.

Chairman

PUBLICITY: AMYA Reporting, local media reporting

MODEL EXPO: Booth Coordination for annual model show

CONSTRUCTION/NEW MEMBERS: Resource for boat construction

TROPHIES: Procures trophies and awards

RADIO FREQUENCIES: Assigns and maintains frequency census

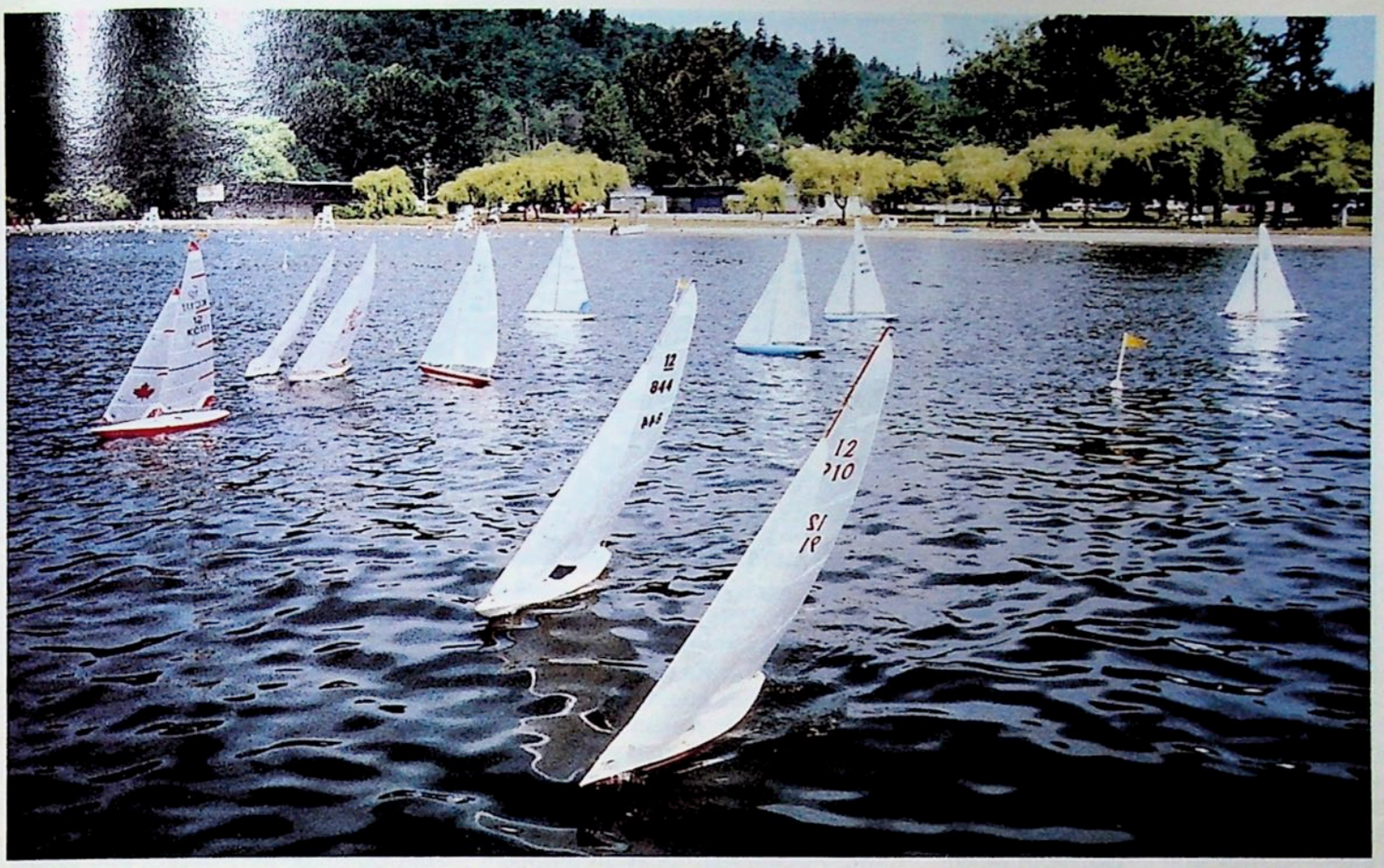
PUBLISHER: Publishes and distributes club newsletter

RULES: Racing Rule seminars, changes, notifications

NEWSLETTER DISTRIBUTION: Duplicates and mails newsletter

TROPHIES: Procures, has engraved and provides at lakeside.

Two things are important here. First, assign these jobs as soon as there are people around to fill them. Switch things around as befits your



A good start is important. Photo at 1989 EC/12 National Championships taken by AMYA President Charlie Scales. Eventual winner, Kelly Martin, is fifth from left, working toward favored side of course. Far end of starting line is behind him.

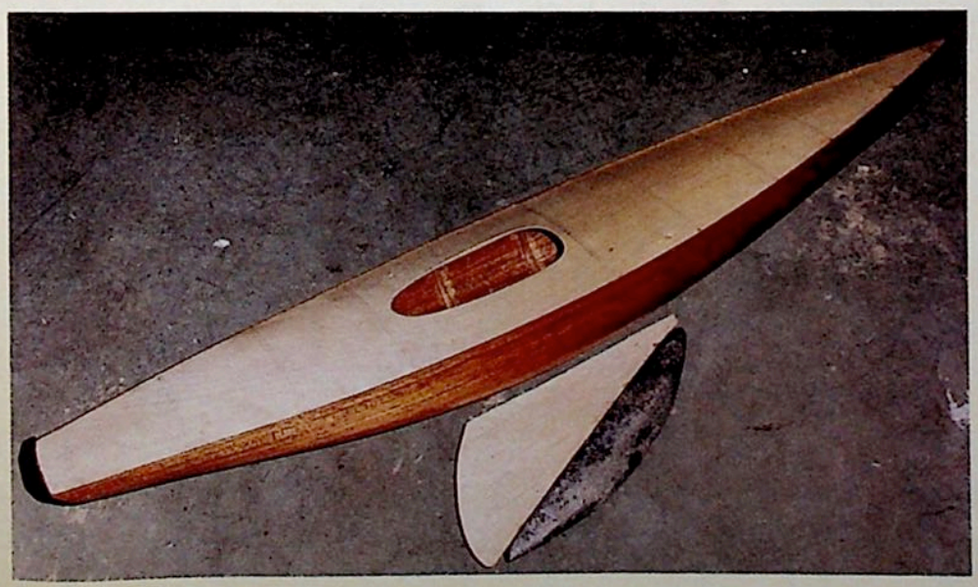
people and their talents. In the above example the retiring Commodore might continue to edit the Newsletter, while the new Commodore will take care of the AMYA Contact, NORC Contact, and actually carry out something like the Model Expo coordination. The jobs are parceled out, even if the group is so small that one person could do it all. If one person does it all, the rest of the skippers take it for granted that one person doing all the work is the way things are supposed to be. It must be made clear to people who are joining the new club, that everybody shares the work load.

The second thing of importance is the existence of a ladder of responsibility. A new member might start out in a Chairman spot, then be elevated to the executive board as Treasurer and expect to move up to Commodore over the next two years. This provides stability in the officer corps, and allows people to gain experience at a number of jobs, eventually becoming Commodore with a good background.

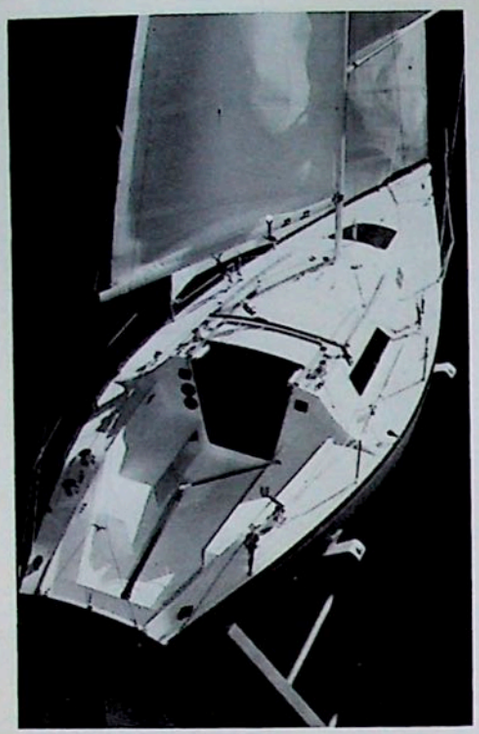
I have been guilty in the past of doing too much. The original Potomac MYC in Washington, D.C. was carried on the backs of Bob Harris and myself for too many years. Even though we had in excess of 30 actively sailing members, when I moved to the West Coast and a year later Bob passed away, the club evaporated virtually overnight. We two midwives really didn't plan on how to "grow up the baby," and it died when its parents were not there to care for it.

Now assuming that the organizational end of things is put well in hand, the obvious question to be addressed is the growth and addition of new members to the club. There will always be natural attrition, people moving, changing interests and so on. The club needs to have a program which will invite the addition of new members in as efficient a way as possible. Here are some things which seem to work well.

1) Contrive to have a stable sailing site. Always sail in one location insofar as that is practical. Clubs which go from lake to lake risk losing potential skippers who can't quite locate the action. Remember, there are



Remember Pocohantas? Here she is with sub-deck attached and keel roughed together. Deck is now planked over, but photographer hasn't caught up. Rod Carr photo.



Another view of San Juan 24 model in this column's lead photo. Scale detail like this is sadly missing from most AMYA class boats.

Yes, we said Rich Matt built four San Juan 24's, and here's the proof. When you're on a roll, why stop, just make four times of everything, and before you know it. . . .

scads of other recreational opportunities out there competing for new members. Sailboats are quiet and slow, so they don't really call attention to themselves. Have a map to the site printed up and ready to mail out to people who inquire and to be put up in local hobby shops.

2) Develop a fixed monthly sailing schedule. My local club sails every first Saturday of the month at 10 a.m. in a practice session to which any and all are welcome no matter what class of boat they have. Potential skippers can be invited to these events and have an opportunity to sail a member's boat for some hands on experience. It is amazing how many of them get a chance to sail the EC/12 belonging to a member and ultimately build a boat to get into that class and the club racing it schedules. The importance of welcoming each and every skipper no matter what kind of boat he has can not be overemphasized. Our club has grown rapidly because we welcome skippers first, and put no pressure on them to do anything other than come to the lake and enjoy the informal sailing, tuning, and learning that is typical of our practice day activities. They can each decide if they want to build a boat matching the ones sailed by the class. If not, some will continue to sail for sport on practice days and can become judges for the Club Races.

On the third Saturday of the month at 10 a.m. we have our regular monthly Club Race for East Coast 12 Meter one-design class boats. The racing is serious, though we try to continue our interface with passers by. The lunch break is usually recommended as a good time for chatting to folks showing interest. Above all, we remind the competitors at the skippers meeting that we are always on display, and that how we act while racing can directly influence an onlooker to investigate the sport more closely.

This fixed monthly schedule is easy for everyone to remember, so each skipper can invite interested parties to the water without having a calendar in his pocket. Another benefit is that if nearby clubs schedule invitational events on the same weekends, skippers who go off to compete, will leave a Club Race that gives opportunity to those who choose to stay behind. This can spread the silver around, and can give some badly needed opportunities for the folks in the middle of the fleet.

3) Make it standard procedure that each skipper is expected to answer questions and be an ambassador for the sport. Have some simple business cards printed up with the names and phone numbers of individuals who express an interest in helping new folks get started. We put our club logo, the newsletter editor and current Commodore's names and phone numbers on the cards. A stack of thirty or so cards for each person's toolbox, and presto, instant public relations.

4) As we identify people who show interest in our hobby, we add them to a special section of our club newsletter's mailing list. The list is updated every month. We will mail a newsletter to the prospect for two to three months, each time urging the person to come to the 1st Saturday "practice" event. If we don't see them again, then on the third newsletter we send, we ask them to send in the Membership Form for the mailings to continue, and purge them from the

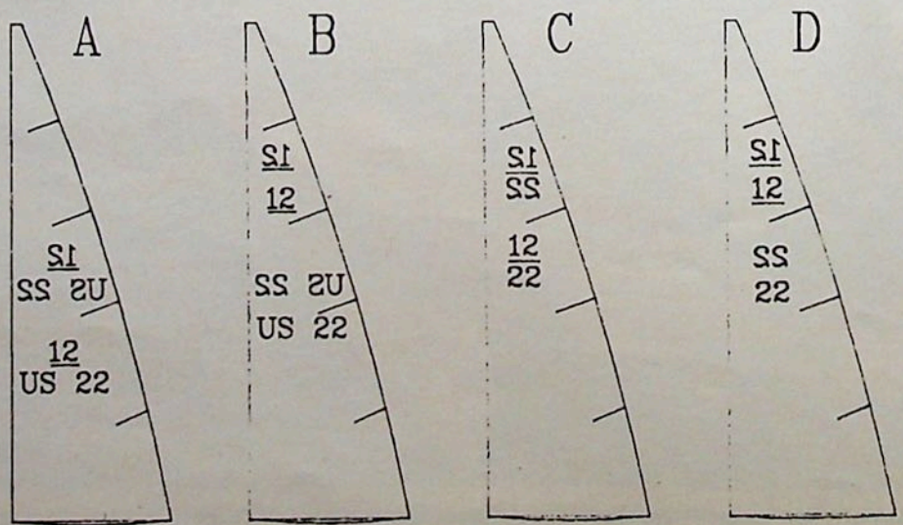
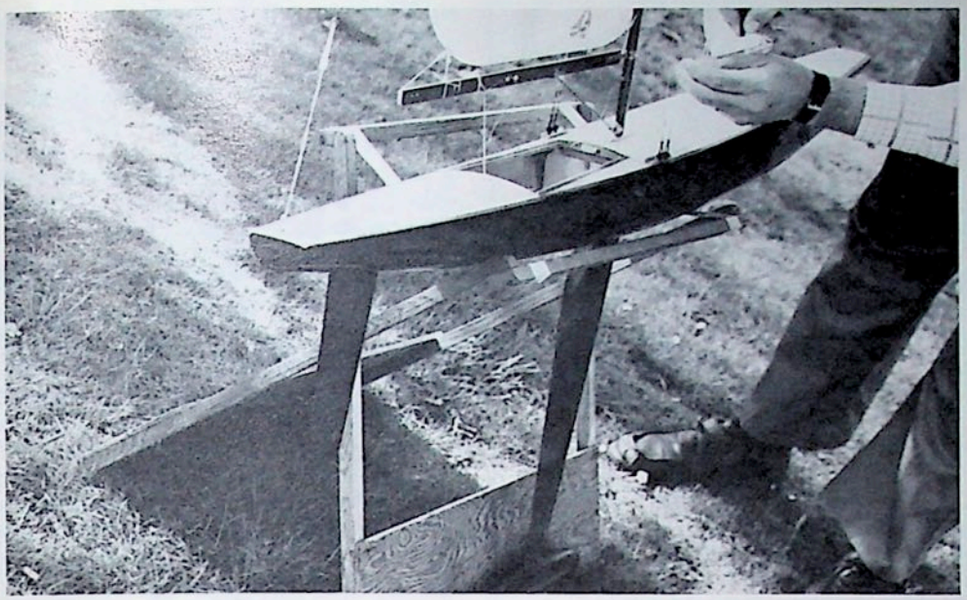


Fig. 1. Sail number application styles. Rod Carr's recommendation for the EC/12 is style "E," for reasons given in article. For taller, narrower sails, "D" or "H" are usually best.



Bob Sterne's "Monocat," ultra-narrow M-Class boat with super-deep fin and rudder. All stability comes from bulb. Hull is just there to keep water from getting to the radio gear.

list.

5) As an appendix to the Newsletter, we have prepared a handout which gives introductory information on the classes of boat we sail. It gives names and addresses of suppliers, and other data that the first-time skipper needs, such as a membership application form for AMYA and for our own club. An annual schedule of our activities is included, giving sailing sites and times. It takes only a couple of minutes at the Xerox to make 8 or 10 copies of the current newsletter and the appendix for taking to the lake to hand out to interested parties.

6) The Newsletter can be very simple, though Desk Top Publishing software and a laser printer can turn out some really professional looking newsletters. More important than anything else is the regularity with which it appears. Ours comes out the week after the third Saturday regatta and is dated for the following month. It hasn't missed an issue in three years. The record for reliability goes to the Minuteman Model Yacht Club in Massachusetts. They have been publishing for well over ten years. Trading newsletters between clubs is a good way to increase the amount of material that can be published. If you have a monthly publication, I would be happy to trade with you. Standing features that should be a usual part of a newsletter are:

a) Listing of Boats and equipment for sale.

b) Schedule of upcoming events for next two months, giving locations, times and a contact person. Especially important is to list races and events being held by nearby clubs to encourage cross pollination.

c) Report of latest Club Race and/or Club series.

d) Cumulative standings if they are being kept.

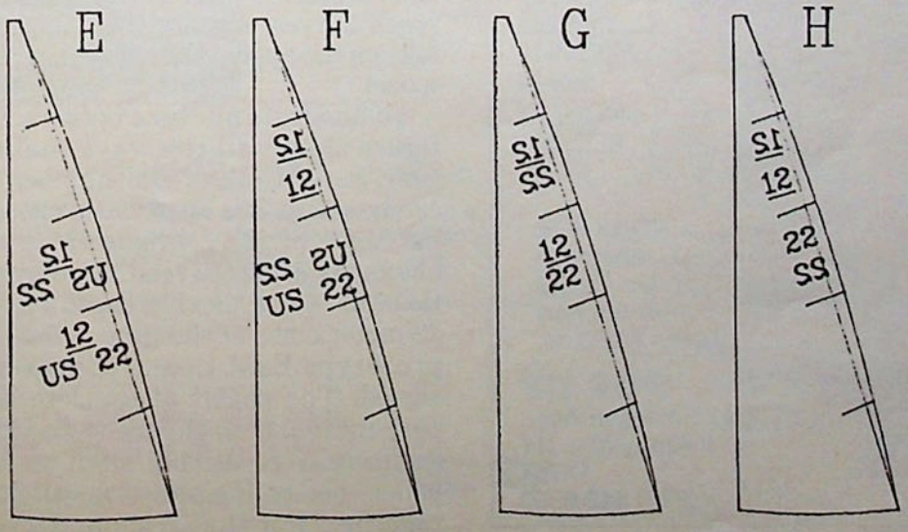
e) A short practical article on some aspect of boat tuning, racing rules or tactics.

7) The guestion of what class to sail can be answered in a couple of ways. The choice is usually made by consideration of the boats already owned by the founding fathers. However, keep two things in the back of your mind. Your club will be healthier if it can sail occasionally with the other clubs located nearby. Consideration of what is being sailed in the neighboring clubs should be given plenty of weight when choosing a class to sail, even if it means the early switching of boats by the founding fathers. Easier to switch three or four boats than 15 or 20. The second point is that, a one-design is often the best way to entice newcomers as there is inherent competitive capability in each and every boat. Formula class boats often are too intimidating to the novice, and the current hi-tech wave seems to scare a lot of us old timers too. A first choice of a one-design, with a second boat chosen from among the formula classes can help provide balance on both sailing and construction. Hot shot one-design skippers can experiment in the formula class, and "builders" who claim they don't want to race can start with a formula class. The availability of used one-design boats will assist in getting people on the water guickly before they get side tracked.

Let's move on to a different subject . . . sail numbering. This is something that can have a definite impact on the appearance of your boat on the water. A beautifully painted hull, nicely lettered and shiny, will look terrible from a distance if the sail numbers are just put on the mainsail in any old way.

The primary purpose of sail numbering is for identification of the boats during racing. Skippers need to talk to each other as the racing rules are applied on the course. Calling out a sail number is the way you address a fellow skipper, whether you know his name or not. At the same time, the Race Committee needs to clearly identify boats which may have hit marks or which have crossed the starting line early and will need to restart. Both skippers and Race Committee count on having legible, easily read numbers on the boats with which they are dealing.

The class rules are usually very specific about how big the numerals need to be. Some rules even specify how far apart they should be placed. Follow these rules carefully, and leave adequate space between the numbers. Many classes are now assigning numbers with four digits and



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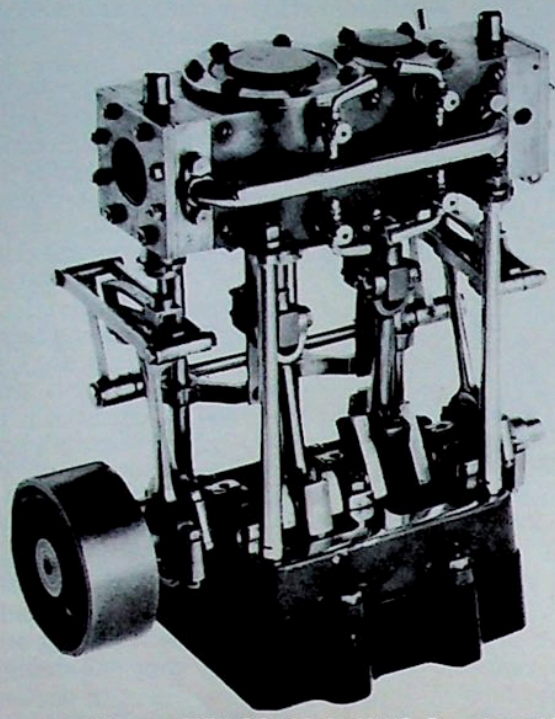

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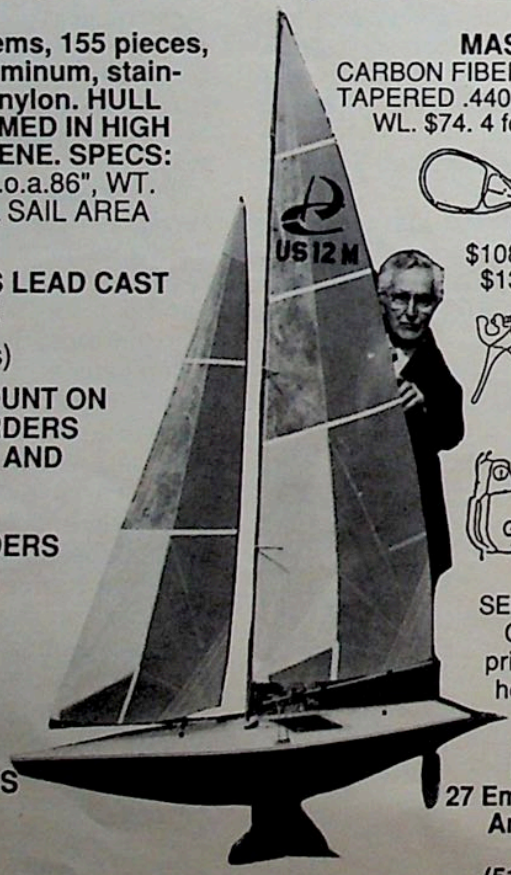

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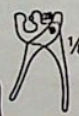

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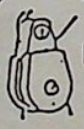

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such long numbers can be clearly read only if the individual letters are well separated.

The international Classes (M, 10R, A and EC/12) provide for marks on the starboard side of the mainsail to be placed above the marks on the port side. As the sail materials in use today are translucent, almost transparent, make sure that the marks do not interfere with one another by separating them in the vertical direction.

An option usually exists for use of the national identifier. In our case, American boats can choose to use "US" in front of the numeral. The US is really a necessity for any boat that will be entered in competition with boats from other countries. There is an EC/12 numbered 111 in the U.S., and a 111 from Canada. No confusion can result if their sails show U.S. 111 and KC 111.

Another option which is often available is the separation of the Class Identifier (M, 12, 10R, A) and the boat's registration number. The choice here can be dictated by the amount of space available for the registration number, with longer numbers having to go lower on the sail.

Alignment of the numbers is either parallel to the foot of the sail (a line connecting the tack and the clew), or perpendicular to the leech (a line connecting the head and the clew). The former is often chosen for sails which are tall and narrow (high aspect) like M Class sails. The challenge in this configuration is to figure out a way to place the numerals so that they do not appear with an awkward stagger.

The "perpendicular to the leech" is more typical of sails with lower aspect ratios like the EC/12 and the International A Class. Here it is important to draw the line between the head and clew, then use a triangle or square to establish the perpendicular. We do not use the edge of the sail as the reference line, because as the roach curves around, the numerals take on the appearance of spokes on a wheel.

To illustrate all these options, the figure shows all the ways that an American EC/12 of sail number 22 can be set up. It is up to you to choose, but some of the configurations are obviously easier to read. Configuration "E" was typical in the full sized 12 meter class at the time when the prototype East Coast 12 was designed. The panels of sailcloth ran perpendicular to the leech and the numbers were usually sewn on the panels before the sail was stitched together. For that reason, dacron

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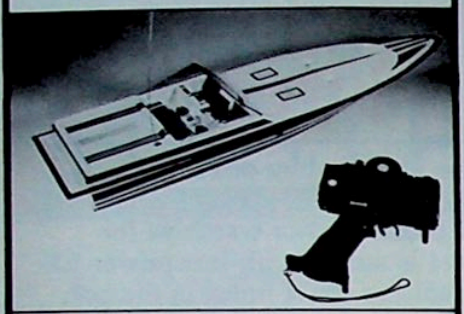

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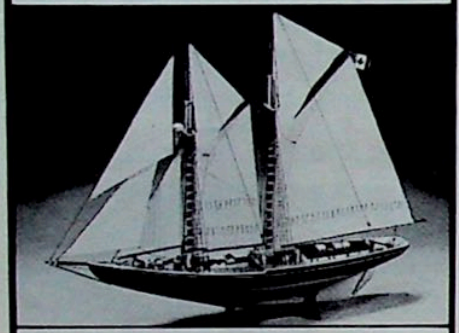

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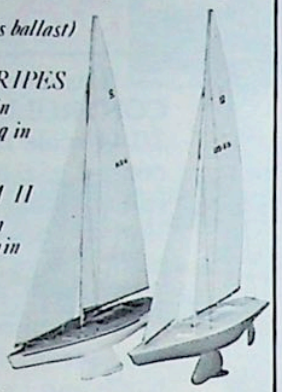

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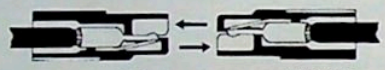

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is held. Any country that is willing to work on the Councils has an active voice in IYRU. America has quite a large assembly of people who donate their time to support IYRU and yachting in all its forms.

IYRU has a series of Divisions, suborganizations which provide support and direction to specific sets of special yachting interests, like sailboarding and you guessed it, like model yachting. The IYRU Division concerned with model yachting has been called the International Model Yacht Racing Union (IMYRU). We Americans have been supporting IMYRU for years, and our American Model Yachting Association (AMYA) represents U.S. skippers within IMYRU. Recent events have seen another model yachting organization called NAVIGA, which is predominant in the near east and asian continents, join with IMYRU as the Model Yachting Division of IYRU. So all the administration of international model yachting is focused in this one IYRU Model Yachting Division.

IMYRU is a service organization. It supports the technical and administrative needs of the world's model yachting community and to do so requires the help of all countries. The work of IMYRU has been done by a handful of dedicated individuals who serve on one or several of the IMYRU Committees. The two most important committees are the Technical Committee, which is responsible for Class specifications, and the Racing Rules Committee. The Technical Committee (TC) is made up of eight or nine individuals from different countries. They work to bring together the concerns of the skippers in all countries as they relate to individual class specifications. One individual on the Technical Committee is designated as a Class Secretary and is the focus of work on that Class. Bob Sterne of Vancouver, Canada is the A-Class Secretary; Rod Carr of the U.S.A. is the EC/12 Class Secretary.

The Technical Committee recommends and interprets class rules in response to questions from the member countries. The TC recommends changes of the class rules to the IMYRU Permanent Committee. The Permanent Committee engages each member country in voting on these class changes with a balloting procedure which is proportional to the number of boats of the class registered within that country. In the EC/12 Class, America has a very large presence since we have a majority of boats presently registered in the world. In the A-class the American presence is proportionally less. The key to influence is the willingness that American skippers have to provide input to the Technical Committee. The voting procedure is established, well defined and very fair.

In short, IMYRU provides a pool of technical wisdom that is more comprehensive than any single country can provide. The mechanism for rule changes requires much communication, much discussion, and thereby prevents the rush to premature rule changes which our AMYA's system allows. A minimum of 3 years is required for a change to a class rule, and most changes fall by the wayside under the scrutiny of experienced

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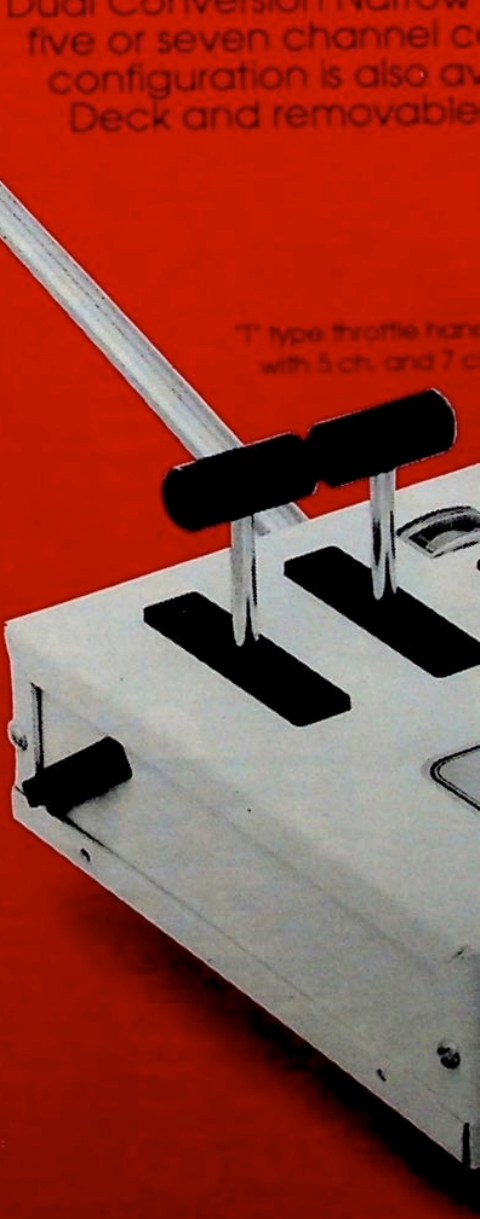

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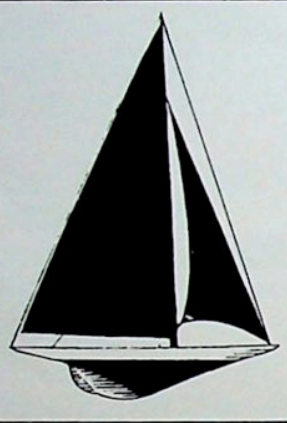

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committee members backed up by their own country's experience with the class. Unless a rousing majority of the Technical Committee is convinced that a change is needed, the issue never clutters a ballot. From my perspective, the IMYRU system works well by preventing arbitrary changes, and by demanding that class rules serve the long term stability of the class; encourage new skippers and boats to enter the class; and protect the interests of existing boats in the class.

Historically, American support for IMYRU has been minimal. Part of the reason is the newness of AMYA and the need that most of her manpower go toward the growth required by the organization to keep it healthy. The notable exception was our own Byron Sansom who served as President of the IMYRU organization a few years ago.

AMYA skippers have every right to continue to invent new classes like the U.S. One-Meter, the INFINITY 54 and the Cubic Meter Classes. They can handle those rules any way they wish. But when it comes to International Classes, America will be hopelessly out of step if it fails to take advantage of the IYRU/IMYRU/AMYA relationships, or if we fail to make a proper contribution of effort and support for the work of the IMYRU.

I'm always looking for photos of your projects and can guarantee the publishing of just about anything that has good contrast and is rated PG. If you have comments or questions, send them along with a stamped, self-addressed envelope to: Rod Carr, 3011 - 177th Ave., NE, Redmond, WA 98052. While you have your envelopes and stamps out, mail in your 1990 dues of $20.00 to: AMERICAN MODEL YACHTING ASSOCIATION, c/o Pat Hein, 1884 Campus Court, Rochester Hills, MI 48309. •

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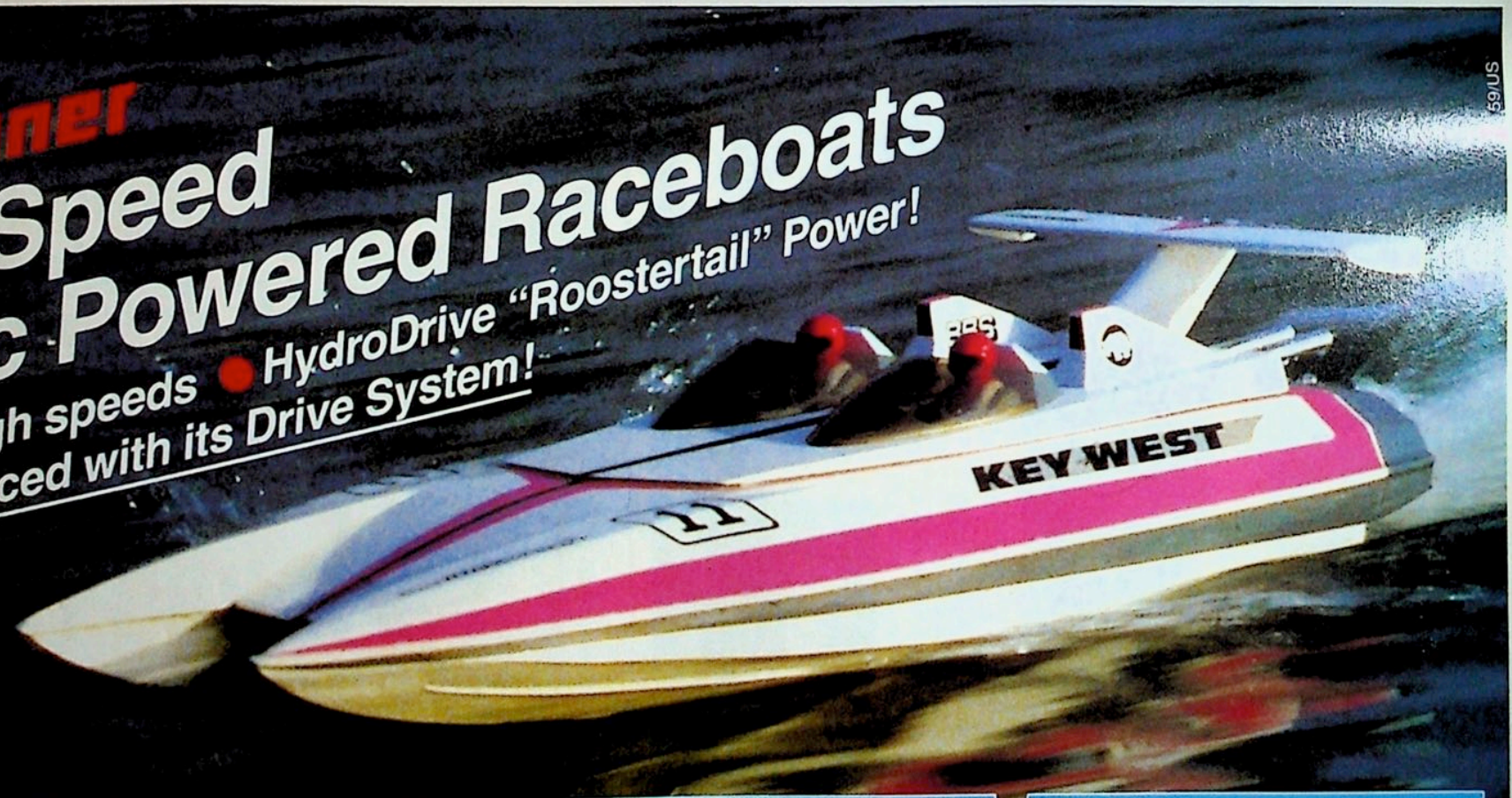

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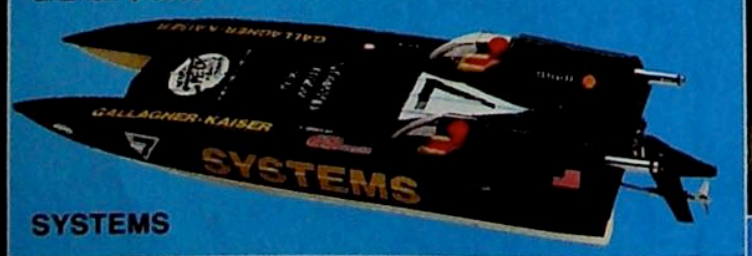

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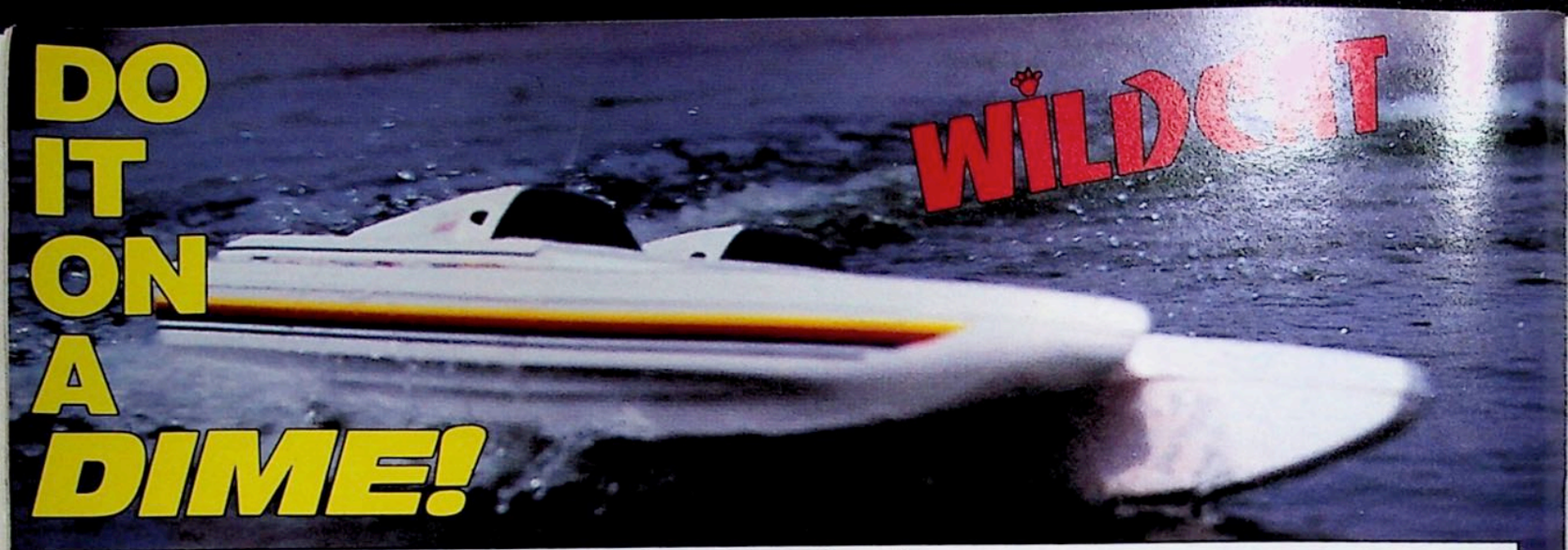

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* * *

Midwest Products Co., Inc., 400 S. Indiana St., Hobart, IN 46342, phone (219) 942-1134, is offering two new all wood scale boat kits in its Success Series; a Sharpie Schooner and a two-man, flat-bottomed rowing skiff. The Skiff is 1" = 1' scale and is 8-5/8" long. The Sharpie Schooner is 3/8" = 1' scale and is 17 inches long. Both models are built from pre-cut and sanded wood parts. The Skiff includes cast metal oarlocks and cordage for the painter. The Schooner includes materials for sails and rigging, cordage, and cast metal brittania fittings. Suggested retail prices are $18.95 for the Skiff, and $49.95 for the Sharpie Schooner.

M.A.C.K. Products has re-released its high-performance power and running hardware kits for Staubitz of Buffalo kits now being produced by Dynamic Models under their "Master Series.™" M.A.C.K. Products custom manufactured these kits expressly for Glenn Staubitz with his approval, for his entire line of 18 Naval and Coast Guard fiberglass kits.

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All power and running hardware kits will be available from your local hobby shop, or direct from M.A.C.K. Products. For further information and catalog on the entire M.A.C.K. line, send $2.00 to M.A.C.K. Products Model Marine, P.O. Box 464, Long Branch, NJ 07740.

* * *

E.O.M. Systems, 9730 Ash Creek, Dallas, TX 75228, phone (214) 321-3673, offers the Black Diamond E.U.-1, an electric powered racing boat, featuring a streamlined low profile deck and sleek hull, combined with surface drive technology to obtain the most speed from its powerplants. It is currently available with 540 motor(s) and 2:1 gear ratio. The thick molded hull is also suitable for gas power. •

Kingdome . . *Continued from page 21*

Tom Maxfield, "Squire Shop"; Paul Omerzu, "Atlas Van Lines"; Sam Defilips, "Stuphen Spirit"; John Earnest, "Miss Budweiser"; and Paul Droullard, "PayN Pak." Paul Droullard's turbine, "PayN Pak," was the defending champion, having won the 1988 Mini Gold Cup when driven by Bill Smiley. David Jensen's outrigger, "PayN Pak," was the second place finisher in the 1988 race.

The four semi-final races produced some great racing as only the winners would advance into the final "Winner Take All" race. Emerging from the semi-finals were David Jensen with the "PayN Pak"; Sam Defilips and his "Stuphen Spirit"; Terry Olding driving the "Tosti Asti"; and Ron Davis rounded out the field with his "Competition Specialities." The "Tosti Asti" and "Competition Specialities" are models of the same unlimited hydroplane driven by color analyst Steve Reynolds under different sponsorships. The "Tosti," "Competition," and "Stuphen" are models of turbine powered unlimiteds that raced in the mid-80s while the outrigger "Pak" very limited race action in 1969.

Knowing how important gaining the inside lane would be at the start of the final, Terry and Ron both came to the starting line ahead of the clock and jumped the start. Ron's "Competition Specialities" quit right at the start when Ron attempted to slow down to avoid a jumped start. David and Sam then staged a tremendous side-by-side

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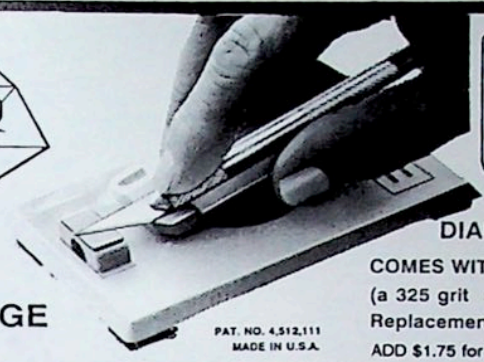

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boat race for almost three laps, with the lead changing several times. The "Pak" then clipped a buoy in the right corner and the one lap penalty gave Sam the win if he could just finish the last two laps. Sam kept the "Stuphen" out of trouble and picked up the win. David's "Pak" placed second with Terry and the "Tosti" finishing in third place. •

Wing Sails . . *Continued from page 24*

water, in addition to the wind tunnel tests. A grown man walking along a low dock with a stop watch in his hand and towing weird-looking things in the water with a spring fish scale inserted in the tow line to measure drag, does tend to arouse the curiosity of passersby; but that is part of the price of progress.

KEEL DESIGN

A sailboat needs to have a vertical keel to develop hydrodynamic "lift" opposing the aerodynamic lift or sail force, to keep the boat from skidding sideways instead of sailing ahead.

Early sailboats had very shallow keels. Part of the reason for that was to minimize the draft of the boat to allow operation in shallow water, but I suspect that ignorance of hydrodynamics also played a major part. An optimum keel to develop hydrodynamic lift needs to look a lot like an optimum wing to develop aerodynamic lift, and the cross section of this vertical "hydrofoil" needs to be like an airfoil. Sure, a flat keel will work, poorly; so will a flat airplane wing, but who wants it? Recognizing that a keel is really an underwater wing, we can see that not only should it have a good symmetrical section shape, but it should have a reasonable aspect ratio. Shallow, long-chord keels have too much induced drag. Likewise, the keel needs to be placed

Continued on page 65

Stinger™

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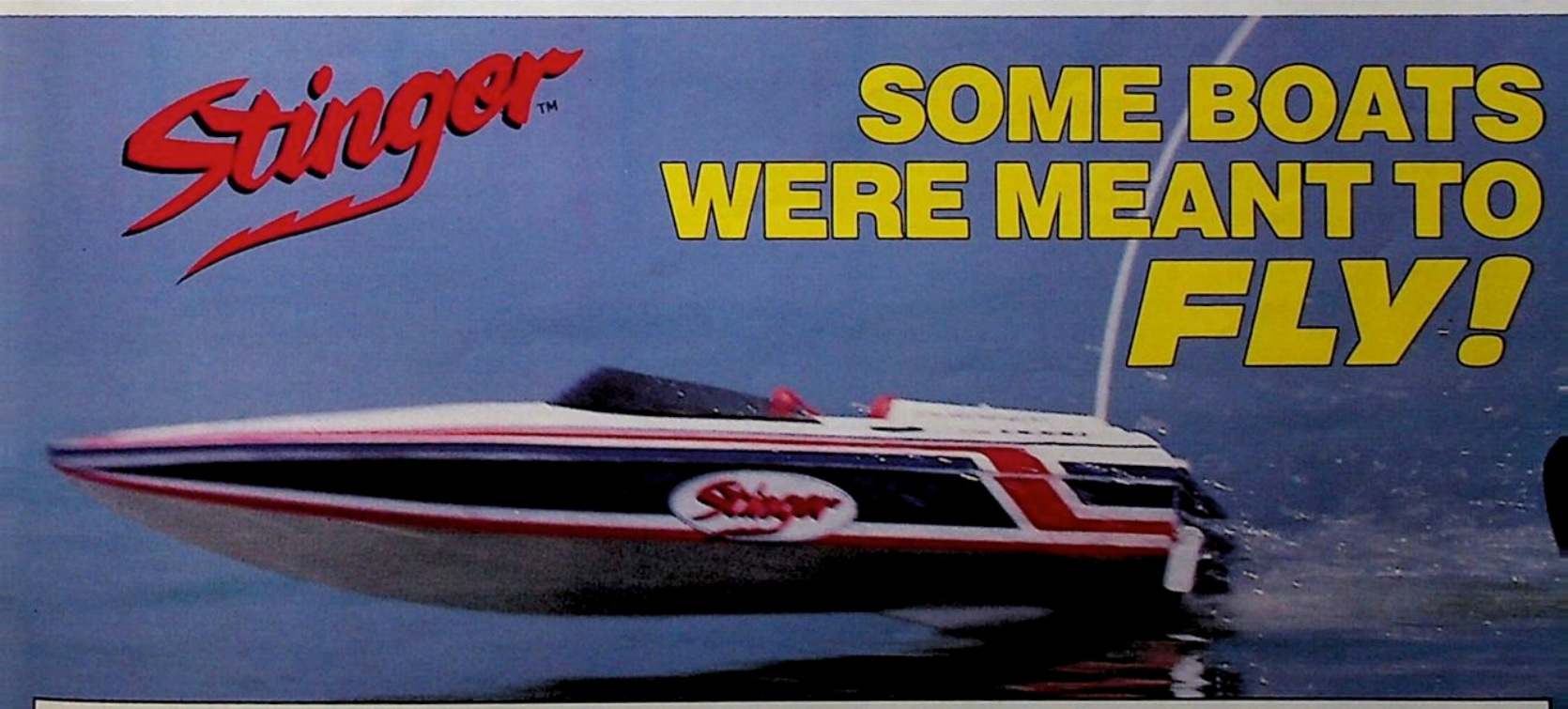

If you want FAST right out of the box, no other electric even comes close to the **GP Marine Stinger**. Its unique Twinline Drive System turns all the energy of two rugged 550 motors into a long-lasting, water spraying rush of power. And the hull is designed to make the most of its speed with easy control. The Stinger is meant to race—and win.

Entirely pre-assembled except for a required 2-channel radio and battery installation, the Stinger continues blasting through the water after maneuvers that leave its competition bobbing behind. Apply the included decals for a sizzling scale appearance, and you're ready to fly! See your hobby dealer or write to us today!

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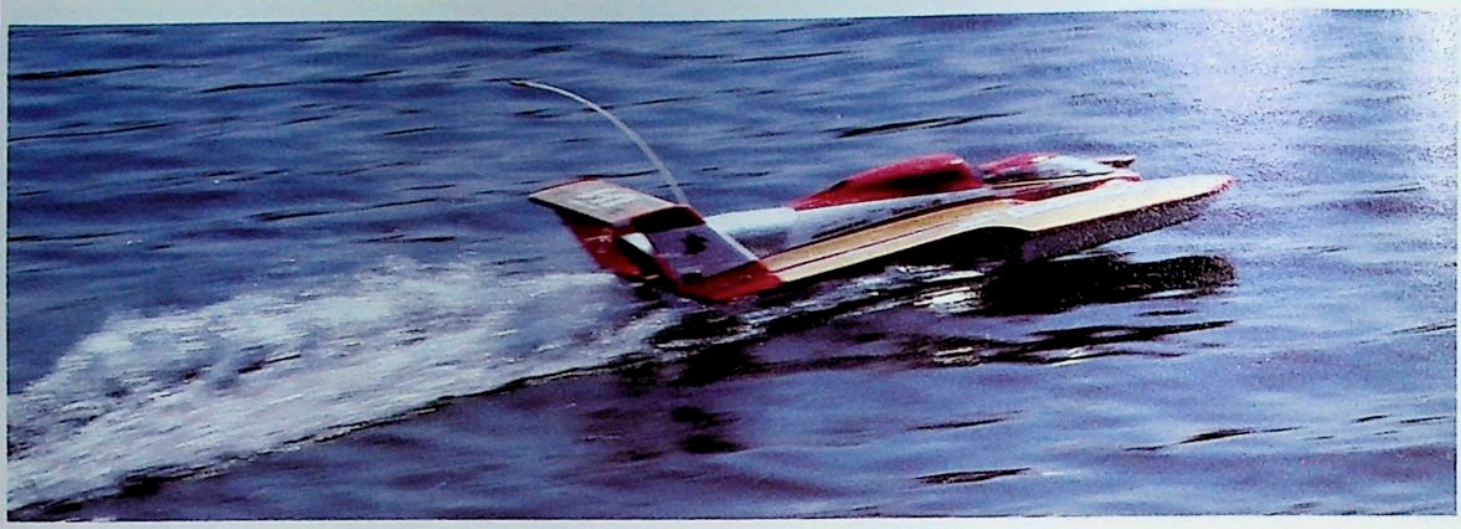


MRP's *ELECTRIC* *Miss* Budweiser

By STEPHEN BROWN

Speed, ultimate speed, unbelievable speed (except to those who have witnessed it first hand), that's what this incredible boat is all about. This boat, in case you haven't already noticed from the pictures, is the "Miss Budweiser" from MRP. I know that this is a review and I shouldn't give the results up front (we do, after all, want you to read this whole thing), but boy, I have to tell you: this boat is gorgeous, easy to build and fast . . . very, very fast.

In case you aren't aware of quite what this is, it is a scale replica of the multi-national championship winning unlimited hydroplane: the "Miss Budweiser." The real thing has been tearing up the competition for a couple of years now, and is still the boat to beat. These real boats are simply awesome to watch, going at speeds that are quite scary to those of us who observe from the safety of our living rooms.

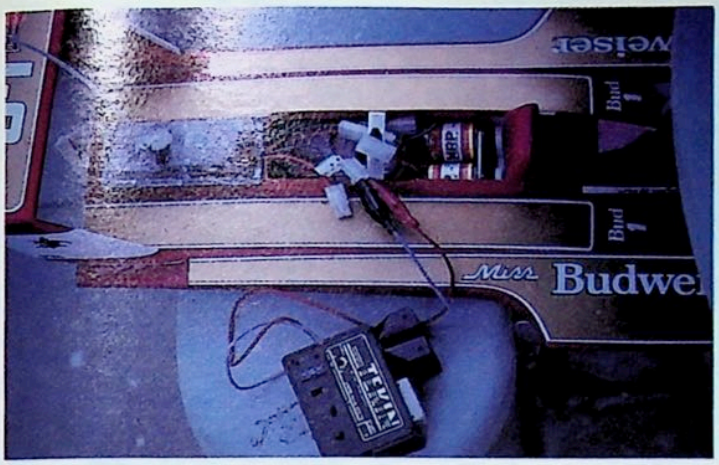
From the time you first open the box of this kit you get the impression of speed. Twin motors stare at you from the box just begging to be able to run faster than the wind. Every part that you pull out of the box is sleek, aerodynamic, and screaming "SPEED" to you. Even the colors are racy, bright red and white, with gold detailing. If you're like me you will want to start building the boat as soon as you get it, so let's get right into it.

You can buy this kit in a couple of different degrees of completion. The kit I obtained is the "deluxe" kit, complete with mounted twin motors and pre-assembled hull. If you get a basic kit you will need to first put the motor mount assembly together, and set up the drive shaft with its stuffing tube. Both of these steps look quite straightforward and should be of no problem to any experienced hobbyist. The next step is to trim the deck, cowl, and radio box. Looking at this step in the instruction booklet and imagining myself with hobby knife (actually, I use the excellent Uber Skiver knife) in hand made me quite happy to have the deluxe kit. I am not very good (some people might say that I'm downright dangerous) at attempting to do this sort of tricky work. I'm certain that I could do it if I took my time, but it is certainly more convenient to get it pre-done. If you are like me, I would strongly suggest that you opt for the deluxe kit.

Overhead view of "Miss Budweiser" on dock, before being hoisted into water. Decals really do the job.

Next you have to join the deck and hull. This simply requires that you fit the styrofoam flotation pieces in place, then glue the two halves of the hull together. It sounds easy enough, doesn't it?

Next in line, and the first step for those of us with the deluxe kit, is installation of the radio gear. For many years now I have used Airtronics radio gear whenever possible in my R/C cars. I decided to use this same equipment in my Miss Budweiser, knowing it to be very reliable and of excellent quality. I used the XL2P transmitter (my favorite transmitter, as it reverses for left-handed use. Airtronics is the only major company that considers us "backwards" people and makes a transmitter to suit us), the 92621 receiver, and two



Radio installation and motors revealed in this photo as a fresh charge is pumped into battery packs. Sermos connectors will improve performance.

Young volunteers, usually easy to find after the first run, lower boat into water for another trial operation.

"Miss Budweiser" on mini-camp stools, with Airtronics XL-2P transmitter. Lots of potential action in that combo!

94831 servos. The servos are small, light and very quick. The transmitter and receiver are of such good quality that you should never have to worry about radio "glitching." I find them to be an excellent choice and one that I would heartily recommend to anyone willing to listen.

Installing the radio gear is quite easy, simply servo tape the pieces in place (make certain to use a good quality black servo tape such as Trinity or BoLink, the white stuff has a very strong glue but rips easily in the foam core) after setting the trim. This is followed by mounting the rudder and the turn fin with the included screws. This proved to be quite easy, I just took my time drilling the holes to make certain they would be straight and they turned out fine. At this point you are ready to mount the radio box lid and the canopy. Oh, no! More cutting out of parts with my trusty Uber Skiver. Well, I managed to do it alright. Believe me, if I can, you can too. It just requires a bit of patience and care (and occasional counting of fingers to make certain all nine . . . or should that be ten? . . . are still there). Both parts should be frequently checked on the model to make certain the fit is correct. The canopy in particular needs judicious cutting, too much and it looks dumb, too little and it doesn't fit.

At this point the boat is virtually done. You might want to take a moment to sit back and admire your handiwork. I did. Don't worry, there's only a little bit to go. You only have to put on the prop, mount the cowl and the wing. Piece of cake! If you have taken your time and followed the excellent instructions that come with the kit you should have an aerodynamic marvel sitting in front of you. They transform your red and white speed machine into a real beauty. They follow, with great precision,It looks sleek, it looks mean, it looks fast. I know that you won't be able to wait to try yours, but take a couple more minutes to put on the stickers. The sticker sheet is remarkably complete. the detailing of the real boat. The bigger ones aren't terribly easy to put on, mine took a couple of tries, but they're imminently worth while. You will be the envy of everyone in your neighborhood for the looks of this puppy alone. As the hull and cowl come ready-made in red and white, the addition of the stickers is really all you need for the finished product.

At this point you're ready to charge a couple of battery packs for your maiden run. Of course, you might want to stick your Miss Budweiser in the bathtub to check for any small leaks while your batteries are charging. If there are any leaks along the seam, just put another ribbon of glue

Continued on page 70

Electrics can't get up and go? Give me a break! It's safe to say that well designed and equipped electric boats can give you all the speed and excitement you can handle!

KYOSHO "JET STREAM"

By JERRY DUNLAP

With just a couple of weeks of my summer vacation remaining, I received a phone call from Editor/Publisher Bill Northrop inquiring whether I had time to review a model before beginning my teaching duties for the new school year. Bill informed me the boat was a gas powered version of the Kyosho Jet Stream 800 employing an OS Max 10 with recoil starter. The electric version of the Jet Stream had caught my eye while I was attending the 1989 IMS in Pasadena. I told Bill, "Ship it up and I'll see what I can do."

The GP 10 arrived a few days later and a couple of items immediately caught my attention upon opening up the box. These folks at Kyosho really know how to put together an Almost Ready to Float model. The 2:1 gear reduction system and OS Max 10 with a recoil starter were rather novel. The packaging of the various components was really well done with the engine /running gear parts arranged together in a blister pack. All the necessary nuts, bolts, screws, and even allen wrenches are packaged in plastic bags. It is the same method of packaging Kyosho uses with its electric cars.

I cannot recall assembling a more complete model boat kit. The only items not included were: the radio system, batteries for the glow plug, and fuel. The only two tools required were a drill and screwdriver. The use of my electric screwdriver assisted in cutting down the assembly time.

The quality of all the plastic parts from the hull to the motor mounts, radio mounts, and outdrive is excellent. Unlike many plastic boat hulls which tend to be somewhat flexible, the Jet Stream is very rigid. The edges of the ride strakes and bottom chine were sharp. This is very important as sharp edges help reduce hull drag by sheering the water and not allowing it to cling to the hull.

The instruction booklet for assembling and operating the hull was very compete with written directions, illustrations, and diagrams. I even took the time to read it over before proceeding. I did one thing sequentially different from what was shown in the instruction booklet. One of the first steps shown in the instructions is application of the trim and detail decals. After all these years of building a model and then putting on the finish, I elected to install all the parts first. I can understand the thinking behind trimming the hull first. The hull is still clean if you stick on the decals prior to installing the running gear, motors and radio system.

As the instruction booklet does an excellent job of depicting the various phases of the assembly process, I'll

Excellent packaging by Kyosho is evident in the Jet Stream 800 GP 10. ABS plastic hull, and O.S. Max 10 provides the power.

The Kyosho Jet Stream 800 GP 10 and Pulsar EXP 2001 make a potent combination for fast fun and excitement.

Rod Geraghty drove GP 10 while Jerry took running photos. Dick Roberts looks on. Rod's expression tells it all.

The Jet Stream runs smooth, clean, and fast. Prop supplied with kit is a good choice.

just make some brief comments about getting the GP 10 out of the box and on the water. The first item that is installed in the hull is the motor mount which also serves as part of the gear drive system. This unit is epoxied (even the epoxy is included) in position along with the stuffing box. The outdrive unit is then attached to the transom. The mounting of the OS Max 10 to the motor mount completes the drive train assembly.

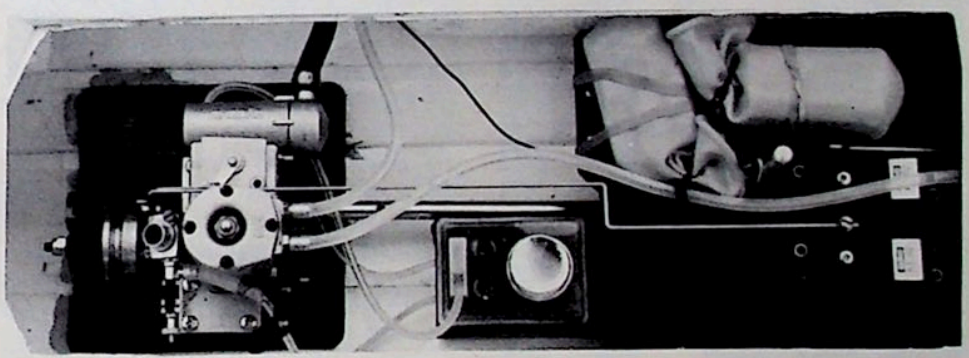
If there is a shortcoming in the GP 10, it would be in the area of installing the radio system. Actually my complaint isn't really with the method of installing the radio, but with the method of preventing water from accessing the radio system. The installation of the radio equipment is very easily accomplished through the use of a radio platform in the rear of the hull. However, I have some real concerns about operating model boats where the radio system isn't completely sealed to prevent water from reaching any part of the radio system. There are holes in the deck and cowl of the GP 10 to provide ventilation for the engine. In rough water or in the event of a flip, water can enter these holes. The seal formed between the deck and hull also allows for some water to enter the hull. For most modelers the radio installation used on the GP 10 will be more than adequate. I simply prefer waterproof radio boxes in all my model boats.

I would also strongly suggest using some of the foam packaging material used to protect the hull while it is in the box, as floatation, should the GP 10 flip upside down. I cut some strips of foam and used silicone glue to attach the foam to the insides of the boat. The possibility definitely exists that this boat could sink if it happened to flip over and then fill up with water. As the foam was readily available. I figured it was worth the time to stuff some of it in the boat.

Although I did not keep an accurate account of the amount of time needed to install all the various components in the GP 10, I'm pretty certain I didn't have more than four or five hours in the assembly process. I worked on the boat on a Friday afternoon and evening then turned it over to my son, Paul, for the application of the stickers. Paul installed the stickers on Saturday and the boat was run on Sunday.

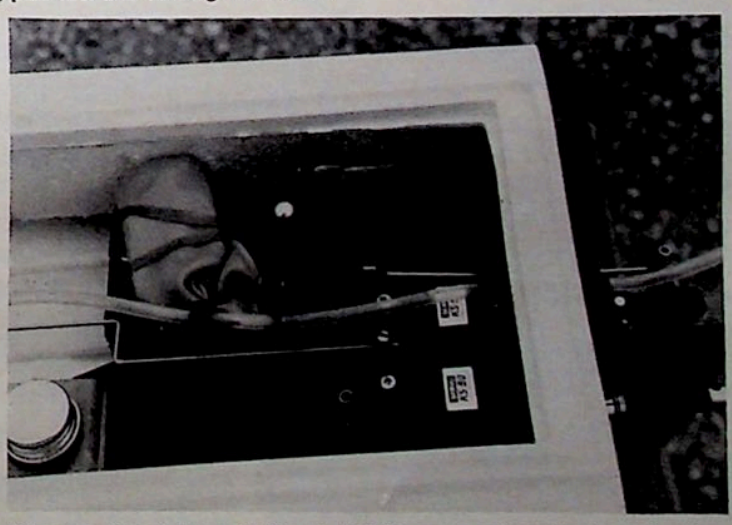
The folks at Great Planes Distributors kindly provided me with a Kyosho Pulsar EXP 2001 radio system to control the GP 10. The Pulsar 2001 system has a few more options than the Pulsar Pro 2000. The EXP 2001

Continued on page 73



Engine/radio compartment showing O.S. Max 10, fuel tank, receiver and battery pack in protective balloons. Note linkages, plus fuel and cooling water lines.

Business end of Jet Stream drive train, showing stock prop. Boat stand is also included with the kit.



Close-up of radio tray with Kyosho KS 90 servos and receiver in protective balloon. Note flotation foam on side.

BOOKS
IN REVIEW

By PETER SHREEVES . . .

C.S. Forester's classic book *The Good Shepherd* is an action-packed story of anti-submarine warfare in the Atlantic during World War II. The central character, Commander George Krause, is the leader of a convoy escort group including his own destroyer, two others and several smaller escorts. Krause is responsible for directing the operations of the group as well as for the safety of the convoy. The action of the book takes place in a 48-hour battle with a wolf-pack during which Krause is constantly on the bridge. The book can be read in approximately the time of the battle or less if one reads quickly.

Those who have read the Hornblower books will be familiar with Forester's style of focusing all of the actions through the eyes and emotions of the ship's Captain. Those who have not could compare it to Star Trek's Captain Kirk, although, as a television production, Rodenbury has to develop secondary characters a bit more to vocalize what is essentially the Captain's experience. In developing a story around a central Captain figure a writer has to develop both the Captain character and the details of the experience with great care and precision. Apart from devotion to duty and the environment of naval command, Krause and Hornblower are quite different people. Krause is an American character with a background and outlook contemporary to the war period.

Where Forester's work shines is in the technical detail of relating the character to the experience from the watch-standing routines of the warship to the flow of information about the ongoing battle to the feel of ice covered bridge-wing railings through heavy woolen gloves. Few writers have the capacity to bring the reader as close to personal experience as Forester and much of this talent is based on the author's own experience and attention to detail. Forester was aided in researching this book by his experience aboard wartime destroyers and by the assistance of an experienced USN Commander, J.D.P. Hodapp, Jr., who helped him get many of the details right. *The Good Shepherd* has been selected for the Naval Institute Press's *Classics of Naval Literature.*

While a fictional novel can provide a powerful vehicle for relating wartime experience, there is no substitute for autobiography. *Subchaser* by Edward P. Stafford is a book about the author's experience as an SC skipper in the Mediterranean 1942-43. The war was an experience for American servicemen that ranged from suffering and hardship to unrelenting tedium. While Stafford's experience included danger and hardship, it is about as close to adventure as a young man could come. For a 25 year old man to be given command of his own ship and sent off to do battle with an evil enemy sounds like something out of a story book. Yet, the SC 692 escorted convoys, patrolled harbors and did battle with the enemy in such exotic sounding places as Tripoli, Gibraltar, Bizerte, Palermo and Salerno. Of course, the adventure was tempered with the responsibilities of command and missing his young wife half a world away. A well written autobiography of the wartime period is more rare than one might expect and Stafford has provided two with *Subchaser* and *Little [illegible] War.* His writing style and familiarity with ships and the sea make for authentic and enjoyable reading. Stafford also wrote *The Big E* about the aircraft carrier Enterprise, and other books.

US Submarine Attack During World War II is an example of current historical research assimilating and often correcting the primary records and documents of the early postwar era. Historians are often faced with the phenomenon that studies done too soon after an event can be flawed for a variety of reasons. They may be biased by the attitudes of the time or limited to the scope of the intended study or suffer from the disparity between available documents covering different aspects of the events. Quite often, events are not related by witnesses until long after or records can be turned up that had been unknown earlier. Submarine operations are especially difficult because of the remoteness of the actions, the difficulty of finding and correlating data from several nations and the volume of information that was lost when subs and ships did not return. John D. Alden has taken on the monumental task of listing all available information on Allied submarine attacks in WWII. This, loosely translated, could include a report of every torpedo launched by an Allied sub at an enemy whether it was successful or not. The compiled listing combines data from such studies as *United States Submarine Losses, World War II,* the reports of the Submarine Operations Research Group, The Joint Army-Navy Assessment Committee and numerous others.

Alden's listing is valuable not only in its thoroughness but in its organization and cross-indicies. The listing is nearly 300 pages of computer printout in columns of date/hour, sub name, location, target name and comments. The attacked vessels are identified by their name, designation and tonnage, but little else. The notes generally comment on details of the attack reports or discrepancies in the sources. Appendices cover some of the submarine mainlaying activities, commanding officer's names (Allied subs only) and the index efficiently lists the names of all known ships. The book represents an invaluable document on the subject but the casual reader might wish to be forewarned that there is little actual text in the book and no photographs or drawings. On the other hand, home-computer owners might like to know that this book is fairly unique in that not only was it generated on a home

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processor but it was also printed by one. The Institute had only to reproduce and bind Mr. Alden's output. *US Submarine Attacks During World War II* is a fine primary source for those interested in Allied sub operations. •

Wing Sails . . *Continued from page 59*

in the proper position fore and aft with respect to the sail to "balance" the boat. This is comparable to getting the center of gravity in the right place in an airplane.

One thing that bothered me was the use of skegs and sharp keel lines or edges down the middle of the bottom of the hull on conventional sailboats. Why? Because in order for the keel to develop its intended reaction force it must operate at an angle of attack. That means the hull must be yawed slightly with respect to the boat's course, which in turn means that the water flow along the bottom is somewhat skewed. A sharp keel line will cause turbulence and added drag in this skewed flow. The keel line on CD Min is therefore nicely rounded to reduce that turbulence.

The keel fin on CD Min is deep with a streamlined bulb lead weight at the bottom of it. This configuration is used on many modern racing boats because it allows a streamlined high-aspect-ratio keel fin, yet gets all of the lead down as deep as possible for maximum righting moment, to counter the heeling force of the wind.

You will recall that the Australians introduced a keel with wings on it into the America's Cup a few years back. This was no high-tech mystery device. The rules limited keel depth, so the Australian designer got around that rule by putting "tip plates" on the bottom of the keel fin to effectively increase its aspect ratio. Airplanes where the span is limited for some reason also sometimes use tip plates, with the same objective. If you can't go farther out or down, go sideways.

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APBA Nats . *Continued from page 45*

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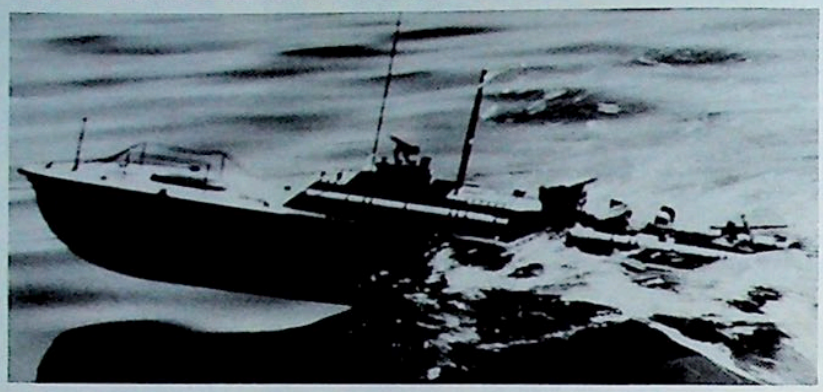

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Skater . . . . . *Continued from page 19*

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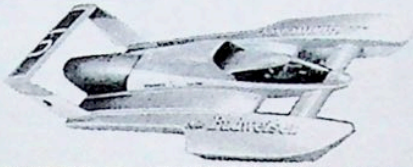

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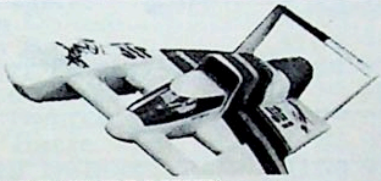

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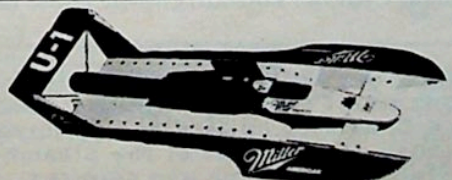

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servations, Futaba radio systems are the most popular radio being used in model boating in the United States today. Futaba offers a wide variety of servos for model boating application, ranging from the S33 micro servo to the S34 heavy duty servo. The S31 has also proven to be a very popular servo for rudder control on many model boats.

Although I think the 2PD Magnum is one terrific radio system, for many model boaters it is probably more radio than they really need. However, we are very involved in racing a variety of model boats and the 2PD is well suited for our competition needs. Many model boaters will want to consider the Magnum Junior or Magnum Sport radio systems. The transmitters for both of these systems have also been restyled for improved balance and handling. •

Miss Bud . . . *Continued from page 61*

along the offending seam. That should take care of it. As the motors are from Trinity (Trinity stock motors with MRP stickers on them) I decided to use Trinity 6-cell stick SCR packs. For those of you who don't know (can that be possible?), Trinity is a long established manufacturer of motors, batteries and other parts for R/C cars. They have a phenomenal record in racing over the last eight or so years, including more world and national championships than I can count. The batteries I chose are an excellent choice. They are genuine Sanyos, the only brand all good and great racers choose. These are the SCR type, the most durable battery I know. You can charge these batteries

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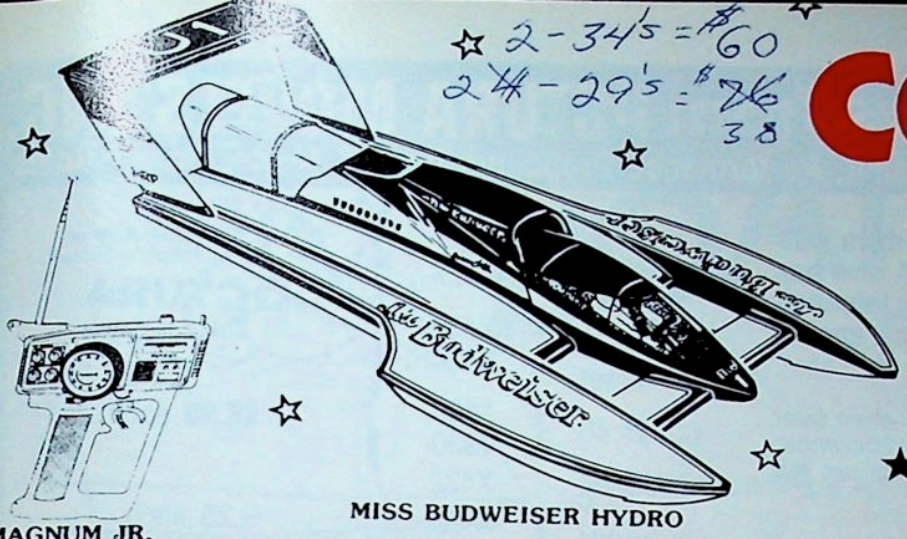

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ALL KITS: Require two channel radio, Ni-Cad batterry pack(s), and charger.
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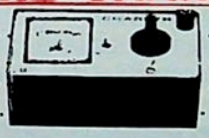

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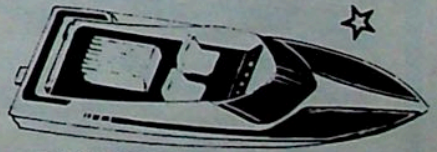

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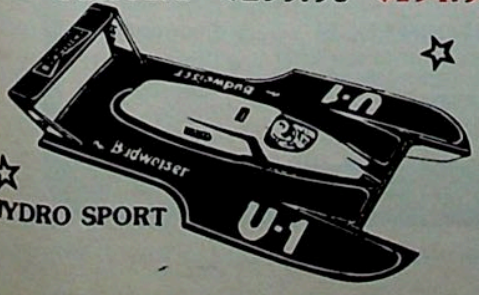

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at a high amp rate (Tekin, the manufacturer of the chargers I used, recommends charging at as high a rate as 9 amps), discharge and then charge and use again without showing an appreciable loss of power. Basically you can abuse these batteries and they will still perform admirably. If you charge them at a high amp rate (I did charge at 9 amps) both packs will be done fairly quickly.

Now comes the moment we've all been waiting for, the maiden run. I put my prized new possession in the water, looked at it appreciatively for a moment, then punched the throttle. It took a heart-stopping moment to get up out of the water (as it chugged along with the hull deep in the water I had a momentary fear that this would be as fast as it went!) then got up into hydroplane. Once up and skimming along the surface of the water, as hydroplanes are meant to do, it took off in a burst of speed. It was flying, skimming just over the surface of the water at an incredible rate of speed and shooting up a rooster tail for all to see. This was some serious speed and some serious fun! I set up an imaginary course for myself, trying to see how fast I could go around a course. Making all my turns to the right, as competition hydroplanes do and as this one was designed to do, and punching the throttle hard down the straight sections, I ran the course at a rate of speed which can only be described as awesome!

When running this boat it would be prudent to remember that these boats normally turn only to the right. Trying to turn to the left will result in a very slow turn but turning to the right too hard can result in a spin and loss of control. When it does spin out (it did happen to me a few times before I got the hang of it) nothing horrible happens. It may go back down in the water and will probably do some terrific splashing around for a moment, but don't worry, it will recover in a moment and go merrily on its way. You can just tell the spectators (believe me, there will be plenty of them when you run this boat, it really draws a crowd), that you did it for

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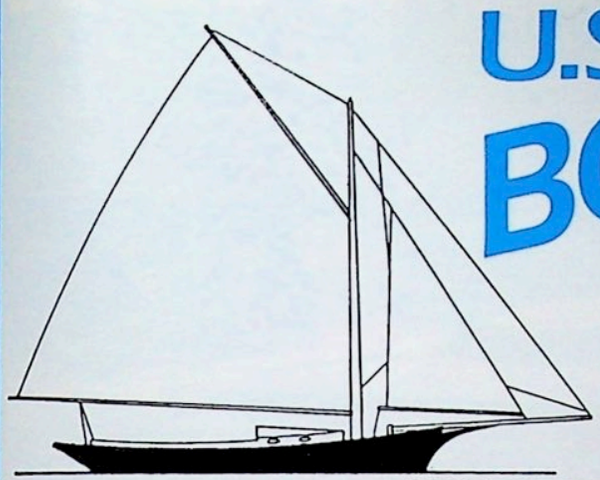

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their benefit.

Well, as I said at the beginning, this is one quick boat. It looks great, is a cinch to build (yes, thank you very much, I still have all ten fingers intact), and will go about as quickly as you could ask an electric boat to go. More than that, it's simply a blast to run. The only drawback that I can see is that run times are in the four-minute range, but that, my friends, is the price of speed. If you decide that this is what you want, pick up an MRP Miss Budweiser, an Airtronics radio system, and some Trinity battery packs. I'll meet you down at the lake. You can't miss me, I'll be the one with the huge grin on my face. •

Jet Stream . . *Continued from page 63*

also costs about $20 more than the Pro 2000. Personally, I think it's worth an additional $20 to have servo end point adjustment, exponential-rate throttle and steering controls, and variable steering rate. The servos included with either the 2000 or 2001 systems provide 34 oz.-in, of torque which is more than adequate for controlling the GP 10. I don't profess to be an expert in the area of why radio control systems work. I do know the Pulsar EXP 2001 worked very well in the GP 10. This system would work fine in model boating applications not requiring high servo torque. The servos have sufficient strength to turn most inboard gas powered boats and 3.5cc outboard tunnel boats.

My first running of the Jet Stream 800 GP 10 took place on a Sunday evening at a lake located near my home. I usually run at this particular location weekday mornings when I have the lake all to myself. On this Sunday evening, I had to share the lake with water skiers and a couple of jet skiers. I didn't run in the immediate area with the big boats, but their wakes provided a good challenge for the GP 10.

I had pre-started the OS Max 10 at home. The recoil starter proved to be one terrific device for starting a model marine engine. It did take about a dozen pulls to get the OS 10 to fire up for the first time. However, after the initial start, the motor started six straight times on the first pull.

The first time I launched the GP 10, I purposely set the needle-valve on the rich side to allow for a little breaking in of the new engine. With the muffler/exhaust system on this boat, the noise level is very low. The boat handled the waves created by the big boats with ease. The only adjustment I had to make was to take out some of the throw on the rudder. The steering strut provides very positive directional control and the boat will spin out if the strut is moved to excess. Reducing the amount of throw was accomplished using the steering rate on the EXP 2001 transmitter.

I ran the Jet Stream 800 GP 10 about a half dozen time that evening. As I mentioned earlier, the OS Max 10 started on the first pull each time after bringing the boat in or in a couple of cases, running it out of fuel. The engine runs were in the range of six to seven minutes with the somewhat rich needle valve setting. Another pleasant surprise while running the GP 10 was the extremely low noise level. The combination of the muffler and exhaust tube bring the noise level down to a "humm." I cannot imagine this model annoying anyone because it was making too much noise.

During that first running session, I would estimate the speed of the GP 10 at around 18-20 mph. I was not expecting a great amount of speed as the 2:1 gear reduction would place the prop speed at around 9,000-10,000 rpm. However, running in the waves

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caused by the ski-boats, the speed seemed very realistic and much more speed would probably have caused the boat to become rather unstable under those water conditions.

The next time I had an opportunity to run the GP 10 occurred later that same week when Dick Roberts, APBA District Director from Albuquerque, New Mexico, dropped by while on his way to Alaska. Dick and I drove up to the Kent Lagoon for some fun running and were joined by Rod Geraghty, former national outboard champion, record holder, and model tunnel boat designer. Dick and Rod have been around model boating for some time and both were very impressed with the overall engineering and appearance of the GP 10 along with the ease of starting the OS Max 10.

I asked Rod to drive the boat while I took runnings photos for this article. Once Rod got his hands on the Pulsar EXP 2001 and drove the GP 10 out on the pond, neither Dick or I had an opportunity to drive the boat the rest of the day. After a couple of photos runs, Rod brought the boat in and suggested trying his Octura X-445 on the boat. I had made an adapter tube which allowed 3/16-inch diameter props to be run on the millimeter stub shaft. With the X-445, the GP 10 definitely showed an increase in speed. The grin on Rod's face was ear-to-ear as he drove the boat around the pond. Rod's comment after we finished running the boat was, "I've got to get one of these for my grandson."

So, there's the "straight skinny" on a terrific little boat. I've had so much fun running the boat and I'm so impressed with the OS Max 10, I've already started cutting wood for a 25-inch offshore catamaran design using the engine. However, I'm planning to run the engine direct drive to take advantage of the rpm this little powerhouse is capable of generating. •

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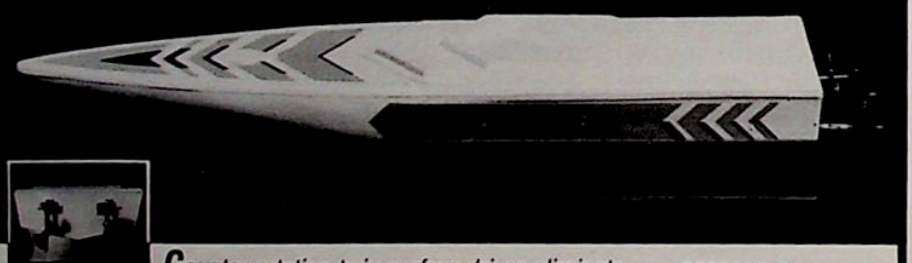

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Combat . . . . *Continued from page 35*

pump. The Axis single out rookie captains for special treatment during battle. USS HOUSTON always had an eager escort of Axis warships. Dan and Shirley Dees flew in from Tigard, Oregon, with a model of the USS OAKLAND in one of their suitcases. Dan is a master builder and his ATLANTA-class CL was a beauty. He used molded plastic components for much of the ship's superstructure to save weight and simplify construction. She had one bow gun and a pump.

AXIS CAPITAL SHIPS

The most powerful ship in the Axis fleet was the JEAN BART (six units), a French BB with two turrets . . . both forward of her bridge. To minimize this disadvantage, Mike Deskin, (Greenville, Ohio), her builder and captain, had equipped her with a single broadside gun in A Turret; this turret could rotate during battle. B Turret mounted three bow guns. She had two pumps powered by .05 electric motors. Obviously, she could be attacked from the stern, but her 24-second speed and heavy forward

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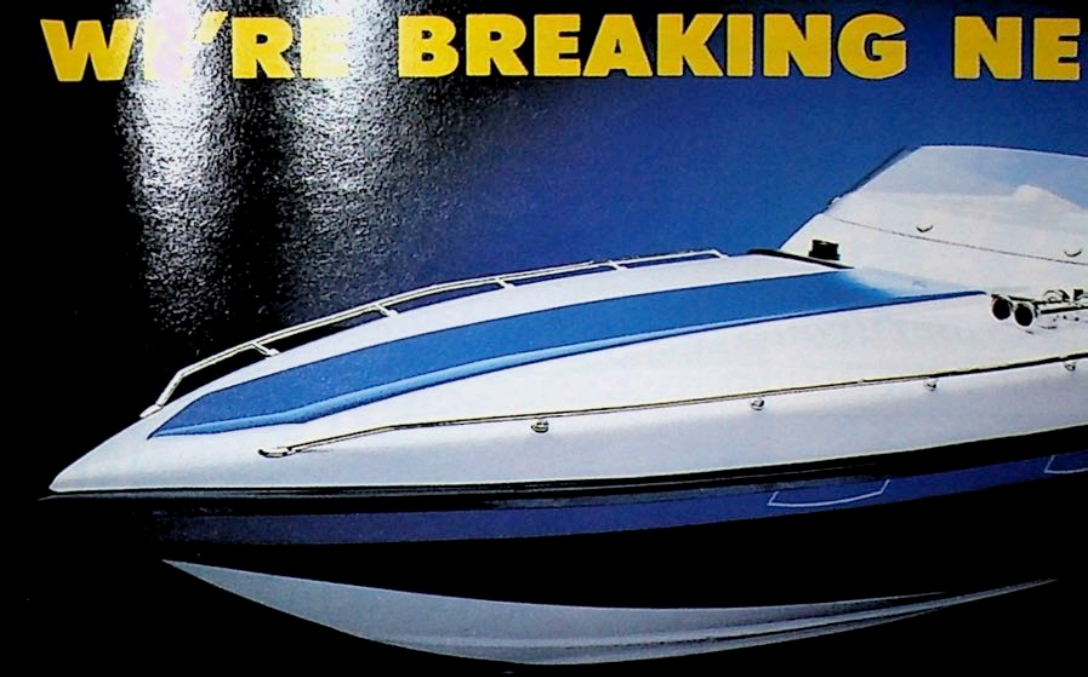

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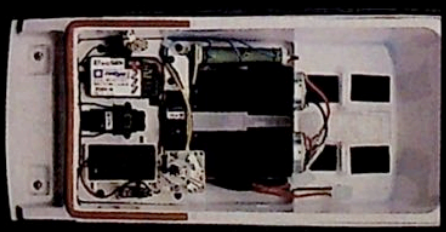

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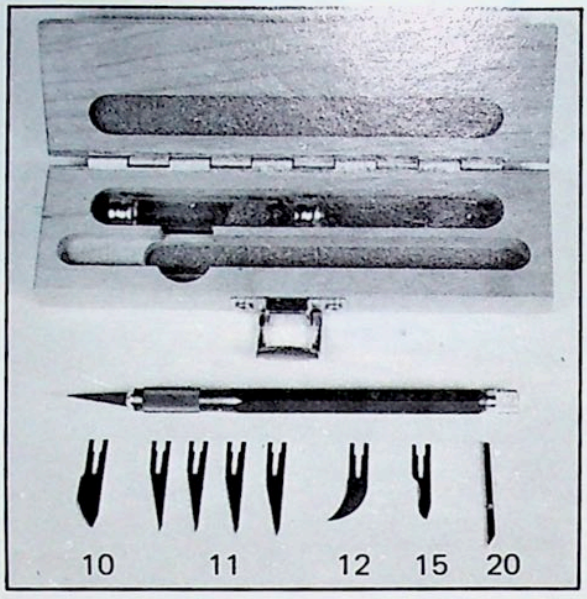

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armament made her dangerous. From Mesquite, Texas, came former club champion D.W. Fluegel and his powerful DKM SCHARNHORST, a five-unit German battlecruiser. This ship was an effective battler and a Best of Scale contender. She was configured with one pump, one broadside gun, two bow guns, and two stern guns (four gun units were used). She had never been sunk and the Allies wanted to send her down. Rick Schultz, (Queenstown, Maryland), brought his new Italian BB, DMB ANDREA DORIA. She was a 26-second, four-unit ship. Rick installed a bow and a stern gun in addition to a broadside gun off her starboard side. She had only one pump for damage control. DMB ANDREA DORIA was a maneuverable ship and Rick piloted her "in harm's way" throughout the week. Jeff Lide, from Garland, Texas, captained the Japanese IJN KIRISHIMA, a BC built during WWI and heavily modified between the wars. Jeff's KIRISHIMA was a four-unit equipped with a broadside starboard gun, two stern guns, a bow gun and a pump. (Only three guns were used at one time.) Jeff was a very aggressive captain with this ship and the Allies learned to fear the IJN KIRISHIMA's broadside gun during the week.

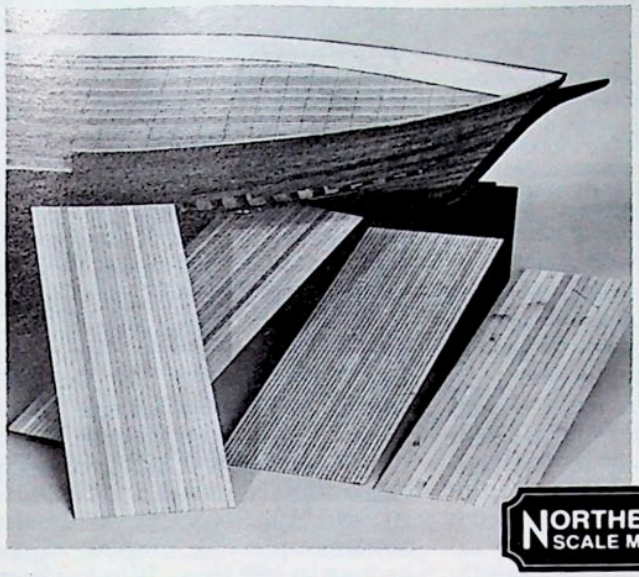
AXIS CRUISERS

Three of the four Axis CHs were from Texas. The Axis depended heavily upon these ships throughout the week. David Haynes, from Abilene, Texas, brought his IJN SUZUYA, a three-unit, 24-second cruiser which was beautifully constructed. Scott Lide (known in this hobby as "Jeff's father"), had his Japanese CH, IJN MAYA, while Gerald Roberts, from Corpus Christi, Texas, surprised the Allied fleet with a new 22-second (35+ knots) CH, IJN TONE. Gerald and Scott have built many combat models during their careers, so these ships were bug free. These three Texas cruisers were formidable battlers and their speed taxed the skills of the Allied CH captains. Two Italian cruisers were present to bolster the Axis fleet. Ron Thibault was a rookie from Glen Burnie, Maryland. He was the captain of a veteran CH, DMB ZARA. Ron had his ship in tiptop shape. He avoided the usual fate of a rookie captain . . . DMB ZARA was unsunk during the week. Beth Schultz, from Queenstown, Maryland, piloted an Italian CL, DMB CAPITANI ROMANI. This CL was configured with a stern gun and one pump. Beth was a new captain, but the ship was a veteran; it has always provided the Allied fleet with problems due to its speed and acceleration.

The Axis fleet of nine ships totaled 33 units to the Allied fleet's twelve ships which mounted 55 units. The Axis captains were required to fight the fight of their life everyday of the week to offset the Allied Fleet's advantage in numbers.

MONDAY BATTLING

Monday was the high point of the week for the Axis fleet; for them it almost seemed like 1942 again. Because they were so outgunned, the Axis strategy was to utilize their generally superior speed and engage the Allies with their stern guns, while avoiding the Allied broadside weapons. The Allies planned to "lay alongside and blast" hoping to minimize their speed disadvantage and maximize their numbers advantage. It was boxer against slugger all week! The Axis fleet successfully imposed their strategy throughout the first day, and won two of the three fleet battles. In Fleet Battle 1 the Allied fleet consisted of nine ships: USS ALABAMA, USS MASSACHUSETTS, USS SOUTH DAKOTA, USS INDIANA, HMS QUEEN



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ELIZABETH, HMS VALIANT, HMS WARSPITE, HMS TIGER and USS HOUSTON. The Axis fielded seven ships: DKM SCHARNHORST, IJN KIRISHIMA, JEAN BART, IJN SUZUYA, IJN MAYA, IJN TONE and DMB ZARA. The Axis sank USS HOUSTON (welcome, rookie!) for a 600 point victory while HMS TIGER withdrew from the second sortie (battery problems), costing the Allies an additional 350 penalty points. DMB ZARA was ram sunk by USS SOUTH DAKOTA, penalizing the Allies another 600 points. The Axis won the first fleet battle 4110 to 3250.

The Allied fleet evened the score during Fleet Battle 2 with a 3425 to 2790 victory. IJN SUZUYA and IJN TONE sank during this battle, but their sink points were partially offset by the withdrawal of the HMS INFLEXIBLE who had joined the fray in the first sortie. DKM SCHARNHORST was pounded with 1300 damage points during the battle, but her pump kept her afloat. During this battle the Axis were outnumbered eleven ships to seven.

The full Allied fleet of twelve ships was in the water for Fleet Battle 3 while the Axis fleet had dwindled to six ships as JEAN BART withdrew due to low batteries. Even with this 1:2 ratio disadvantage, the Axis triumphed in the third Monday battle 3730 to 3685. Heavy cruisers from each fleet sank: IJN SUZUYA and IJN TONE on the Axis side, and USS HOUSTON and HMS YORK for the Allies. It was a tough day for the rookie ship USS HOUSTON. On Monday the Axis won a close 10,630 to 10,360 victory; given their smaller fleet, they considered the outcome a major triumph. Their fleet tactics had prevailed and their strategy was proved. Could they sustain this record throughout the week, or would Allied numbers wear them down (shades of WWII)?

TUESDAY BATTLING

The morning fleet battle pitted nine Allied ships against eight Axis battlers; DMB ANDREA DORIA was added to the Axis fleet and her broadside gun was a welcome addition. During this battle the Allied battlecruisers fared as they had at Jutland; HMS TIGER and HMS INFLEXIBLE were both sunk by the Axis. USS OKLAHOMA CITY also joined them in Davey Jones' Locker. However, the IJN KIRISHIMA was pounded by the Allies for 1650 damage points when she ran aground on a concrete launching platform at the edge of the pond. Repeated ramming attempts by DKM SCHARNHORST could not free her. IJN KIRISHIMA didn't sink (she couldn't), but her damage nearly offset the Allied BC sinks. The Allies squeaked through with a narrow 5115 to 5040 victory to even the score at two fleet battle victories each.

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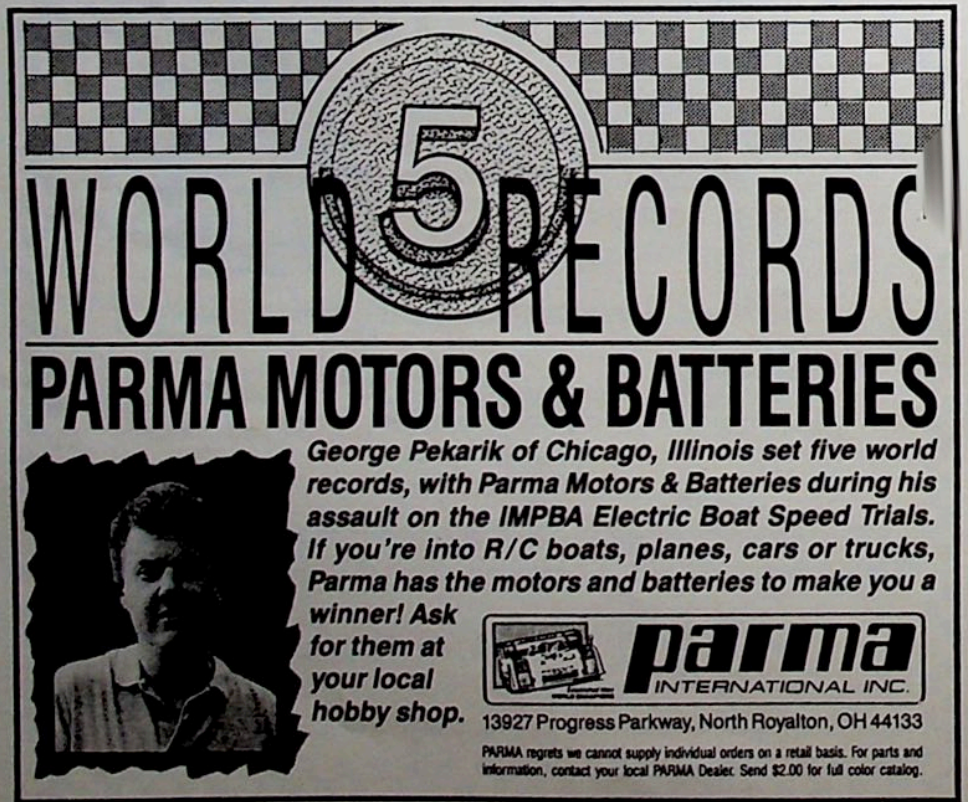
paign battle . . . a 2-1/2 hour battle complete with unarmed supply ships and shore bombardment targets. The opposing fleets convoyed their supply ships and defended their shore target while attacking the enemy shore target and supply ships. Supply ships carried cargo used to replenish depleted ammunition and fuel stocks (batteries) and patch hull holes. When supply ships sank and/or shore targets were damaged, a fleet's ability to fight was diminished and eventually destroyed. In retrospect, this Campaign battle was the equivalent of Midway for the Axis fleet. Their small numbers required them to stretch their limited resources too thin and the Allies used their superior numbers to gain a one-sided victory. The Allied strategy was to use two of their SOUTH DAKOTA class BBs as Axis ship killers, while the remainder of the Allied capital ships and cruisers engaged in convoy attack and protection and shore target defense and bombardment. This tactic was very effective as the Allies sank DKM SCHARNHORST, IJN SUZUYA, JEAN BART, DMB C. ROMANI and four Axis supply ships. The Axis sank six Allied supply ships (one of them piloted by Shirley Dees), but no Allied warships. The Allies had more supply ships to lose, and were successful in keeping their convoy lanes open in spite of their heavy losses. As in WWII, the Axis exhausted their stock of ships and supplies while the superior ship quantities of the Allied fleet were available for the required sea control activities. The Allies displayed quality as well as quantity; HMS VALIANT and HMS INFLEXIBLE pushed a disabled Allied supply ship more than 200 feet through the hostile Axis fleet to bring the supply ship safely to the Allied forward base; this action was a direct parallel to the British experiences at Malta during the great war. Attrition was a major factor in the outcome of this battle. The Allied tactics proved decisive; their increased confidence was in evidence during the remainder of the week and the Axis never seemed to recover from the pounding they experienced during this Campaign battle.

WEDNESDAY BATTLING

Wednesday's schedule included one-on-one battling, small ship fleet battles and a night fleet battle. During the afternoon the following one-on-one battles occurred: USS MASSACHUSETTS defeated IJN KIRISHIMA; DMB ZARA defeated USS HOUSTON; USS MASSACHUSETTS nearly sunk HMS QUEEN ELIZABETH; IJN KIRISHIMA defeated USS ALABAMA; HMS WARSPITE was beaten by JEAN BART; USS SOUTH DAKOTA defeated her sister ship USS ALABAMA. An afternoon downpour of rain limited the number of one-on-one ship battles. When the rain stopped, the battlers readied the small ships for action. Small ship fleet battles involve light cruisers and destroyers. The Axis ships, IJN ABUKUMA (light cruiser), DMB C. ROMANI and IJN ARAKI (destroyer) battled the American fleet composed of USS OAKLAND and USS O'BANNON (destroyer). The buzzing, slashing Axis ships thumped the outgunned Allies, 300 to 20. The Axis almost sunk the lone USS OAKLAND in the second sortie, but the CL was kept afloat by her pump.

All of the ships in the night fleet battle were equipped with servo operated identification lights which could be turned on and off at the captain's discretion were also lights on the perim ponds so the site was not t (as was the case at previo nship night bat- tions of nti- ns in om- four [illegible] QUEEN ELIZABETH, HMS VALIANT, HMS TIGER, USS MASSACHUSETTS, USS HOUSTON, USS OAKLAND, USS OKLAHOMA CITY, and HMS YORK). The Axis fleet was seven ships: JEAN BART, DKM SCHARNHORST, IJN KIRISHIMA, DMB ANDREA DORIA, DMB ZARA, IJN TONE and IJN SUZUYA. Night battle was a one-sortie affair so all the captains were aggressive from the start . . . the cruisers did not hang back to let the capital ships exhaust some of their ammo. USS OKLAHOMA CITY was quickly damaged far forward in her hull and sank, but JEAN BART paid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for her aggressive tactics and was also downed to give the Allies an early edge. IJN SUZUYA was added to the Allied victims. She contributed to her own demise with loose deck fasteners which allowed water to enter her hull when she was backing. When the battle haze had cleared the Allies gained a 2815 to 1740 victory, almost doubling the score.

THURSDAY BATTLING

The Allies launched seven capital ships and three cruisers (USS ALABAMA, USS MASSACHUSETTS, HMS QUEEN ELIZABETH, HMS VALIANT, HMS WARSPITE, USS SOUTH DAKOTA, HMS TIGER, USS HOUSTON, USS OAKLAND and HMS YORK) for the morning battle. The Axis fleet was reduced to six stalwart ships . . . DKM SCHARNHORST, DMB ZARA, IJN TONE, DMB ANDREA DORIA, DMB C. ROMANI and IJN SUZUYA. Two Axis capital ships were on the sea against seven Allied BBs and BCs. DKM SCHARNHORST and DMB ANDREA DORIA were singled out for Allied attention in the first sortie; DKM SCHARNHORST took 1175 damage points and DMB ANDREA DORIA 450. The Allies pounded out a 2560 to 720 win in Sortie 1. Axis damage score was reduced in Sortie 2, but the DMB C. ROMANI was sunk to insure the Allied victory. Final score of this battle was 3935 to 1175 . . . the Allies continued to roll. It was apparent that the small size of the ponds was a definite aid to the Allies. The Axis speed advantage was negated because wounded Axis ships couldn't escape the slower Allied capital ships. As Steve Milholland said, "Knoxville was a battleship pond."

For Fleet Battle 2 the Allied fleet was composed of the same seven capital ships; USS HOUSTON dropped out to reduce the Allied CHs to two ships. IJN KIRISHIMA, JEAN BART and IJN MAYA joined the Axis, while DMB ANDREA DORIA and DMB C. ROMANI were absent from the Axis fleet. The Allied fleet outnumbered the Axis nine to seven. The Axis started the battle like they were going to reverse the trend of the past three days. They sunk USS OAKLAND (1030 points) and severely damaged HMS YORK. However, IJN KIRISHIMA soaked up 1300 damage points to nearly offset the Allied damage. The Allies won a close first sortie, 2640 to 2325. HMS YORK withdrew prior to the second sortie, but the Allies vowed to sink IJN KIRISHIMA. Good to their word, in the second sortie the Allied capital ships circled the wounded Japanese BC and finally sank her after a long struggle. IJN KIRISHIMA suffered 3120 total damage points, but she went down with her ensign flying. The Allied fleet scored a resounding 3215 to 865 victory in the second sortie. The total score for the battle was: Allies, 5345; Axis, 2990.

FRIDAY BATTLING

Because the Awards Banquet and club meeting were held on Friday night, only one fleet battle was held on Friday. The battered Axis fleet was eight in number with only JEAN BART missing from the action (historically accurate for the French fleet). The Allies launched nine ships with two CHs replacing capital ships . . . HMS BELFAST for HMS TIGER and USS SALT LAKE CITY for USS SOUTH DAKOTA. By Friday the Allied tactics had evolved to include a high degree of cooperation between

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INDEX TO ADVERTISERS

A.J. Fisher 56
Ace Radio Control 65
Coles' Power Models 50
Dagger Boat Works 64
Dumas Products Inc. ..... Cover 2
Dynamic Models 52
E.O.M. 74,80
Edjer, The 59
Evergreen Model Boats 39
Full-Size Plans Service 78
Gilmer Hobby & Machine Inc. 39
G.P. Marine 58
Great Planes Model Dist. 59
Hartman Fiberglass R/C 70
Hayes Products 65
Hobby House 67
Hobby Lobby International .. 56,57,80,Cover 3
Hobby Stuff Inc. 56
IMS 4
International Hobbies, Inc. 74
International Hobby Corp. 54
J' Tec 80
K&S Engineering 80
Kyosho 17
M.A.C.K. Products Model Marine 66
Micro Mark 40,41
Midwest Products Co. Inc. 1
Model Racing Products 3
Model Rectifier Corp. (MRC) ..... Cover 4
Northeastern Scale Models, Inc. 77
Northwest Hobby Supply 69
Octura Models 68,72
Parma International 5,78
Pop Up Manufacturing Co. 50
Prather Products 72
R/C Buyers' Guide 70
Radio Controlled Models (RAM) 66
R/C International 71
Robbe Model Sport 51
Robinaire 52
Rossi USA 65
Sermos R/C Snap Connectors 54
Skunkworks Mfg. 53
Steve Muck's R/C Boats 12
Taubman Plans Service Intl. 65
The Dromedary 68
The Pipeline 77
The Scale Shipyard 68
Uber Graphics 76
U.S. Boat & Ship Modeler Subs 73
Victor Model Products 54

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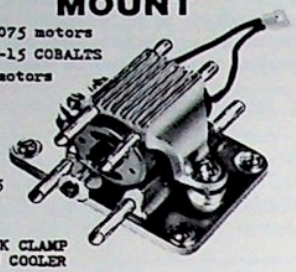

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the American and the British ships operating as sub-fleets. The British ships operated together as did the American ships. If one Allied ship got into a serious situation, there were always numerous Allied capital ships ready and able to assist the damaged vessel. The Allies continued their domination by sinking DKM SCHARNHORST, DMB ANDREA DORIA, DMB C. ROMANI, and IJN TONE. No Allied ships were sunk; however HMS VALIANT was heavily damaged in Sortie 1 when her main motor wiring [illegible] she was left dead in the water. Her pumps and other Allied warships saved her. USS OKLAHOMA CITY was also low in the water but the Allied capital ships provided cover to enable her to last through the sortie. With four sinks for the Allies to none for the Axis the resultant score was one-sided. The Allied fleet had swept the pond of the dreaded Axis fleet by a score of 6920 to 3325.

During the week in Fleet Battles eight Allied ships were sunk while fourteen Axis ships went to the bottom. The ship sink rate per sortie offered an insight into the effectiveness of the Allied fleet. Six Allied cruisers were sunk during 36 cruiser sorties; this resulted in a sink/sortie rate of 17%. The Allied capital ship sink rate was 2%; two sinks in 101 sorties. Axis cruisers sailed in 56 sorties and were sunk nine times for a sink rate of 16%. Axis capital ships were sunk fove times in 36 sorties, a sink rate of 14%. The opposing cruiser forces fared equally but the Axis capital ships were seven times as likely to be sunk. The Allies won six of nine fleet battles and the Campaign battle. They outscored the Axis 34,510 to 25,200 in the fleet battles.

When all the battle smoke had cleared and the Apple microcomputer had chugged through the numbers, the Champions had been identified: Total High Points, James Foster (USS MASSACHUSETTS); Class 1 Champion, James Foster (USS MASSACHUSETTS); Class 2 Champion, D.W. Fluegel (DKM SCHARNHORST); Class 3 Champion, Jeff Lide (IJN KIRISHIMA); Class 4 Champion, Will Montgomery (USS SALT LAKE CITY); Small Ship Champion, Dan Dees (USS OAKLAND); Best of Scale, Dan Dees (USS OAKLAND) and D.W. Fluegel (DKM SCHARNHORST); Rookie of the Year, Leif Goodson (USS HOUSTON). The Class Champions were determined by high points per sortie average during the week. ●

Cap'n's Log . . *Continued from page 9*

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